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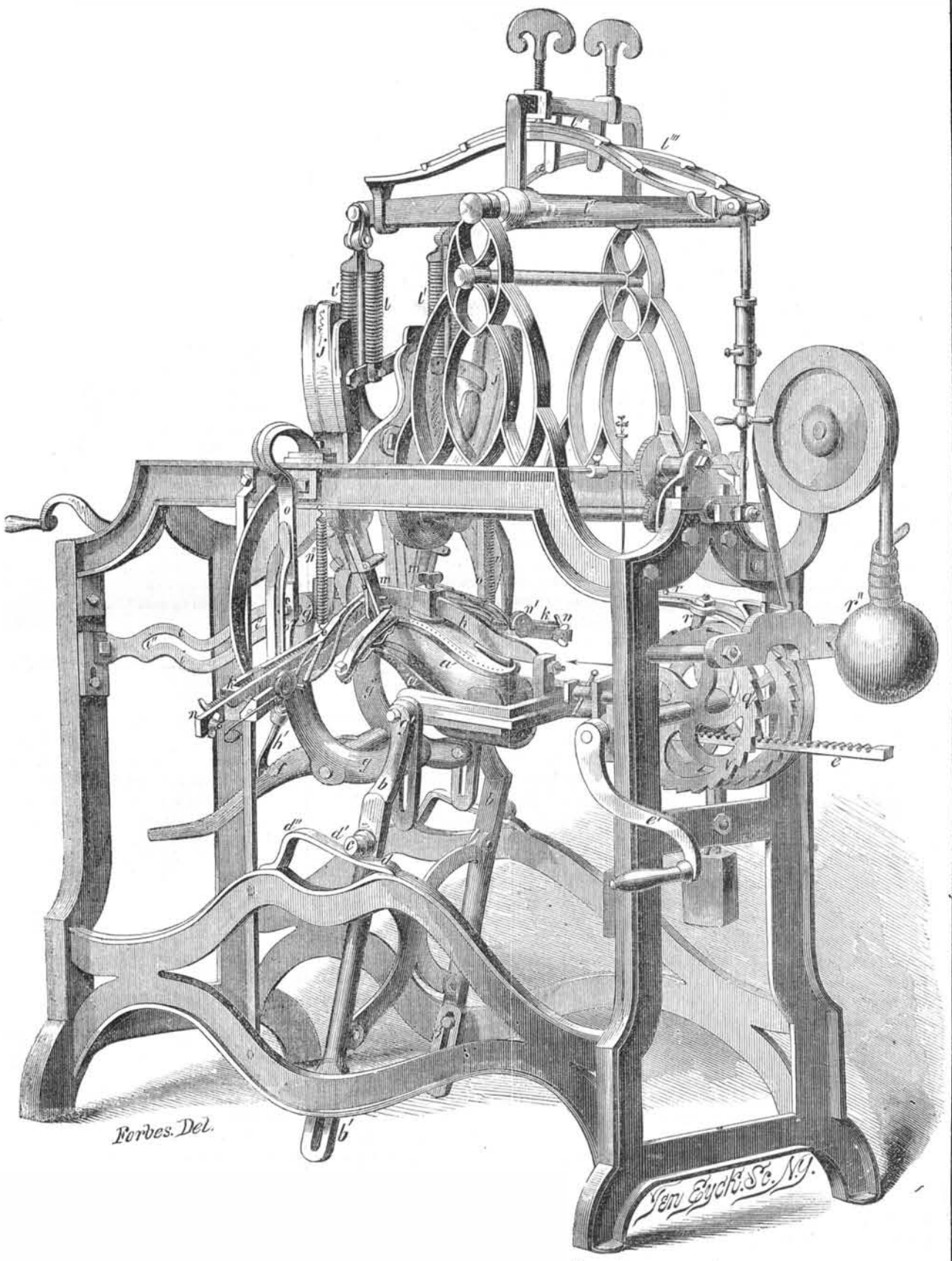
Boot and Shoe Pegging Machine.

BOOT AND SHOE PEGGING MACHINE.



The accompanying engraving is a perspective view of a machine for pegging boots and shoes, for which a patent was granted to John Standish, of Cuyahoga Falls, Ohio, on the 14th of last February, one equal half of the patent being assigned to Horace A. Miller of the same place.

This is a very ingenious machine,—it places every two pegs exactly the same distance apart; and every one is driven in with equal force; it can place two or more rows of pegs in both sides at one operation; in all its details it seems to be complete; a few pegs at the toe and heel are put in each shoe by hand, as the machine does not turn round the shoe.

a' is a shoe placed in the case, *a*, and is represented as being pegged; *h* is a clamp, which secures the shoe firmly in its case. The shoe frame is a peculiar one; its motion is made to conform to that of the sole of the shoe, and it is moved forward with an intermittent progressive flexible motion, to bring the shoe correctly under the pegging awls and drivers, two sides being pegged at once, thus embracing two machines, as it were, in one. The shoe-case, *a*, has an axis pin, which works up and down in a slot, in each side standard, *b b*. *g g* are curved arms of the shoe frame, and are attached at the middle to the notched lever, *f*, which holds, by the pawl, *h'*, the said frame steady in front, as the shoe is moved forward. *e* is a rack bar secured to the back end of the shoe frame; this bar, as it is moved forward, feeds the shoe to the awls and pegging hammers. It is moved by a pinion (not seen) on the center of the cross shaft of lever *e'*. This pinion has an intermittent progressive cam or irregular motion forwards. This is given by the two notched feeding wheels. The weight, *q*, has a belt (by a mistake the belt has been placed round the pulley in the wrong direction), which passes round a pulley on the cross shaft, and were this shaft not held by pallets, *r r*, which take alternately into the notches of the wheels, *q'*, the weight would run the bar, *e*, rapidly forward; but the pallets, *r r*, are operated by two pins in the face of a small wheel, which is revolved by a pinion. The pawls, *r r*, are attached to rods, the shoulders of which rest on the pins named, so that as the wheel revolves, each pin, alternately, lifts the arm of the ratchet, to raise the latter from a notch of the wheel, *q'*, and allow the rack, *e*, to be moved forward. The wheels, *q'*, have their teeth so cut, as to move forward the rack bar, *e*, in such a manner as to suit the inequalities of curve in the sole of the shoe, otherwise the pegs would not be regularly placed apart.—They are therefore laid out by rule and cut of such lengths as to feed forward the shoe so much every stroke as to suit the cycloidal curves of the shoe sole. It will be observed that the top shaft gives the machine all its separate motions. The lever, *e'*, is only used to run back the shoe after it has been pegged; *b b* are the standard supports of the shoe frame; they have slots, *b' b'*, in their lower parts, to allow the shoe to rise and fall; *d d' d''* is a fixed curved guide rail, on which a roller on each standard, *b*, rolls, and as the standards are fed forward, the shoe frame is raised on them by the said fixed curved rail. Another curved slot, *i''*, made in the rail, *i i*, guides the front end of the shoe frame, by a pin on each side of the frame, running in each slot. This curvature of the rail and slot is made to raise the shoe to the exact and proper distance under the awl and peg-driver, and gives the shoe the proper angle to receive and drive in each peg. All these devices are therefore very correct and skillfully arranged.

The awls and peg drivers are driven down by double hammers, *j*—a pair on each side—and these are lifted up and let fall by their own gravity on the heads of the awl and peg-drivers by a cam (not shown) on the top longitudinal shaft. The awl and peg-drivers are attached to an arm on each side, which is secured to the front end of the beam, *l''*, between the two coiled springs, *l l'*. The cam which lifts the hammers, *j*, does so by pins lifting up and compressing the springs, *l l'*, so that whenever the cam frees the lifting arm, the coiled springs, *l l'* rebound and drive the peg and hammers down on the drivers, *m m*, with great force; (one of these drivers may be called the awl shank.) For light work these coiled springs may be removed, as the peg and awl drivers are lifted up and forced down on the sole of the shoe by the beam, *l''*, which oscillates on a center pin, like a walking beam. It is vibrated by a crank on the back end of the top shaft, which is secured by a changeable strap or arm, to the back end of the beam, *l''*; therefore, as the crank revolves, the strap rises and falls, and this gives the beam, *l''*, a vibratory motion, forcing the awl and peg driver shanks down on the sole by the one motion, and raising them up by the other. The triple plate springs, *l''' l'''* on the top of the beam, *l''*, renders the latter somewhat flexible. so as to allow the connecting arms of the awl and peg drivers, to be driven further down by the action of the hammers. The peg driver rises a little above the awl shank (although both are connected to the one arm) by a sliding pin, to allow a peg to be moved forward and under it.

The awl, when it is struck into the shoe, could not be easily raised by the beam, *l''*, but a plate spring under a notch of the awl-shank,

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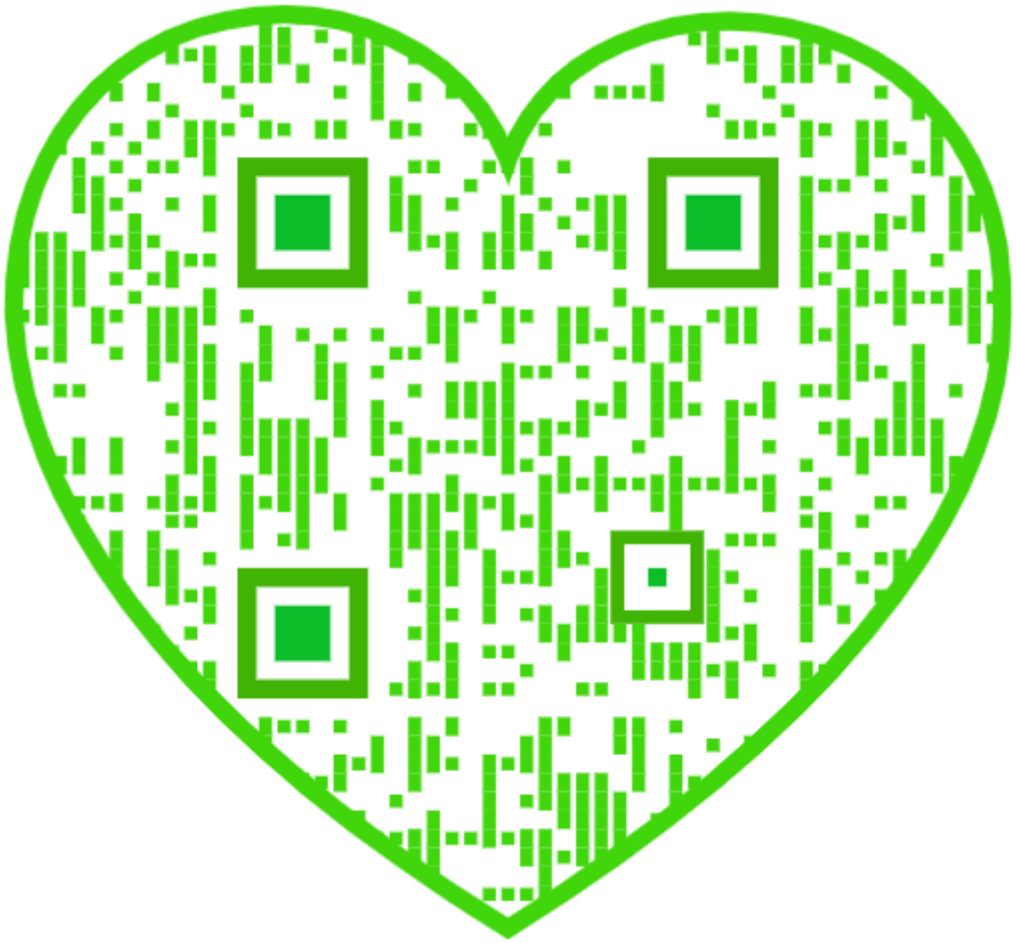

is forced down by the stroke of the hammer, and then when the stroke is given, the recoil of this spring acts upon the awl and enables it to rise with great ease.

O O are two straps hung on the outside of the main frame, and sustain the small frame which feeds in the pegs to the shoe. A thin slip of wood is placed in a narrow groove, and is fed into a knife by a small coiled spring, *d*, which moves forward the bed of the strip of wood. The knife which cuts the peg is driven down by a shoulder on the shank of the peg-awl. This peg-feeder is regulated, in and out, by a nut, *n*, to put in pegs to any number of rows. When the peg is cut, the knife which cuts it is lifted up by a spring, *n''*.

The peg-feeding devices accommodate themselves on an axis to the inequalities of the sole of the shoe, and insert the pegs into each hole, after the awl has punched it, in a very complete manner. This machine embraces a great number of motions, and is somewhat complex, but it is very ingeniously constructed and very perfect and complete in all its actions.

The inventor, Mr. Standish, is at present in this city with a large working machine, from which the above engraving is taken. He is about proceeding to Massachusetts with it, to exhibit it to the great boot and shoe manufacturers there, and for it we bespeak a careful examination by all who are interested in such work. Those who desire more information by letter can obtain the same by addressing the patentees—Standish & Miller—at their place of residence, named above, in Ohio, or No. 195 Broadway, Office of C. R. Miller, where the machine can now be seen.

New Patent Bill.

The following is the new bill for re-modeling the patent laws, to which we referred last week. It was introduced on the 20th ult., by Senator James, from the Committee on Patents:

A BILL TO AMEND THE SEVERAL ACTS NOW IN FORCE RELATING TO THE PATENT OFFICE.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Commissioner of Patents may establish rules for the taking any affidavits or depositions which may be required in cases pending in the Patent Office, and may prescribe the officers before whom such affidavits or depositions shall be taken, which he may do either by general regulations or special orders. Such officers or persons shall have power to issue subpœnas to compel the attendance of witnesses, which may be sent to any distance not exceeding fifty miles from the place where the witness is required te attend. They shall also be vested with power to administer oaths, to issue attachments, and punish for contempts so far as the same shall be necessary to compel the attendance of witnesses, or to preserve order while taking their depositions. And whenever a witness, from whom an ex parte affidavit is desired, shall refuse or fail to give full testimony on all points suggested to him, interrogatories may be propounded to him, which, together with the answers thereto, may be reduced to writing, and used in place of an affidavit, and if any person in making an affidavit or deposition, as above contemplated, shall willfully swear falsely, he shall be deemed guilty of perjury, and be punishable accordingly.

SEC. 2. And be it further enacted, That when any judge, before whom an appeal from the decision of the commissioner is now or shall hereafter be pending, shall for any cause be unable to hear and determine the same with reasonable promptness, the Commissioner of Patents may require the appellant to select one of the other judges to whom the case shall be transferred, and if within a reasonable time, to be fixed by the commissioner, such selection is not made, the appeal shall be dismissed.

SEC. 3. And it be further enacted, That in addition to the force now employed in the Patent Office, there shall be appointed four principal examiners and four assistant examiners, whose mode of appointment, compensation, and duties shall be as provided for other officers of the same respective grades; and should the business of the office require a still further increase of force, a number of second assistant examiners, not exceeding ten, may in like manner be appointed. The first assistant examiners shall be rated as of the second class of clerks, and the second assistant examiners, machinist, and librarian, as of the third class.

SEC. 4. And it be further enacted, That all laws for the withdrawal of money deposited after the passage of this act, on the failure of an application, are hereby repealed; but when money has been paid into the office by mistake, or when for any other reason money shall have found its way into the office, which in justice and equity ought not to be retained, it shall be the duty of the commissioner to cause the same to be refunded, for which order he shall place his reasons on record.

SEC. 5. And it be further enacted, That the right to file a caveat, or to apply for any patent, design, or re-issue, shall be enjoyed equally by citizens and aliens; and the fee required of aliens shall be the same as required of citizens of the United States. The law requiring applications for additional improvements is hereby repealed.

SEC. 6. And be it further enacted, That instead of the oath heretofore required of the applicant for a patent or design, he shall only be required to swear or affirm that what he has described and claimed in his specification has not been invented or discovered by any other person in this country, or been patented or described in any printed publication in this or any foreign country prior to the invention or discovery by himself, (or "prior to the date of his application," if he chooses to state it in that manner.) As against an applicant who fails to make oath that he verily believes himself the original or first inventor of that for which he sells a patent, the foreign inventor shall be allowed to show priority of invention, and to obtain a patent accordingly: Provided he shall make application within one year from this date, or within one year from the date of his invention. This provision is not intended to take away any of the rights heretofore enjoyed by foreign inventors.

SEC. 7. And it be further enacted, That when an interference has been decided in favor of one of the parties thereto, a patent shall be granted accordingly, (unless the successful party shall have a patent previous to the interference,) and the filing of a new application, subsequently to the day of hearing, on the interference shall not prevent the patent from being granted.

SEC. 8. And be it further enacted, That from and after the passage of this act, every patent shall be granted for five years. Upon the application of any patentee or assignee of a patent for the extension of a patent so granted, within six months previous to its expiration, and upon payment of one hundred dollars to the credit of the patent fund, the Commissioner of Patents shall extend such patent for the term of fifteen years, which extended term shall be subject however to the conditions and restrictions for the confirmation of such patent, and the proceedings for annulling such patent hereinafter provided in this act. And all patentees and assignees of patents which are now in force may, after the lapse of five years from the date of the issue of the letters patent, avail themselves of the provisions of this act: Provided, That the term for which such patents may be extended shall not exceed the term of twenty years from the date of issue of the original letters patent: And provided further, That no patent shall be extended for a second term.

SEC. 9. And be it further enacted, That a patent shall not be subject to a writ of attachment or any process of law issued on judgment rendered for debt, but shall inure to the benefit solely of the patentee, his heirs and assigns. Nothing contained in this section shall be construed to avoid or annul process of law as against the products of an invention, a machine constructed under a patent, or the avails of a patented invention.

SEC. 10. And be it further enacted, That the Commissioner of Patents is authorized to restore to the respective applicants, or otherwise dispose of such of the models belonging to rejected applications, as he shall think unnecessary to be preserved. The same authority is also given in relation to all models accompanying applications for designs. He is further authorized to dispense in future with models of designs where the design can be sufficiently represented by a drawing. He may also substitute smaller models for any that may be in the office which are larger than can be retained with due regard to the convenience of the office.

SEC. 11. And be it further enacted, That the limit now fixed to the number of collectors who may be authorized to forward models to the Patent Office is hereby removed, and the commissioner may appoint as many as he may find expedient, and so much of the tenth section of the act approved the third of March, eighteen hundred and thirty-seven, as authorizes the transportation of models to the Patent Office to be chargeable to the patent fund, is hereby repealed. The Commissioner of Patents is hereby authorized to employ his chief clerk to frank such letters and documents as are permitted by law.

SEC. 12. And be it further enacted, That the commissioner may require all papers filed in the Patent Office to be correctly, legibly, and briefly written; and for gross misconduct or willful violation of the rules of the office, he may refuse to recognise any person as a patent agent, either generally or in any particular case, but the reasons of the commissioner for such refusal shall be duly recorded. And the Commissioner of Patents is hereby authorized to admit such persons to practice as patent agents as he may deem qualified, and no person shall be permitted to act as agent for inventors who shall not have received such authority from the Commissioner of Patents.

SEC. 13. And be it further enacted, That from and after the passage of this act, the right of appeal to the chief justice, or to either of the associate justices of the circuit court, shall cease, except as to cases which then have been finally acted upon by the Commissioner of Patents, and to which the right of such an appeal shall then be complete.

There shall be appointed, in the same manner as is now provided for the appointment of commissioner, an Assistant Commissioner of Patents, with a salary of——dollars per annum, payable out of the patent fund; who in all cases during the necessary absence of the commissioner, or when the said principal office shall become vacant, shall have the charge and custody of the seal, and of the records, books, papers, machines, models, and all other things belonging to the said office, and shall perform the duties of commissioner during such vacancy; and whose duty it shall be to entertain appeals from the final action of the examiners in the manner which shall be prescribed by the commissioner. And from his decision an appeal may be taken to the commissioner in person upon the payment of the sum prescribed in the thirteenth section of this act.

SEC. 14. And be it further enacted, That so much of the laws now in force as fix the rates of the Patent Office fees are hereby repealed, and in their stead the following rates are established:

On filing each caveat, ten dollars.

On filing each specification with one claim, twenty dollars.

For each additional claim, ten dollars.

On issuing each patent with one claim, ten dollars.

For each additional claim, five dollars.

On appeal from assistant commissioner to commissioner, ten dollars.

And when the number of words in any patent shall exceed one thousand, then shall be paid (in addition to the regular fees above prescribed) the sum of twenty-five cents for each hundred words.

On application for a design or re-issue of a patent, fifteen dollars.

On every appeal from the commissioner, twenty-five dollars.

On filing each disclaimer, ten dollars.

For copying, per hundred words, twelve and one-half cents.

For recording every assignment, agreement, power of attorney, &c., of three hundred words or under, one dollar.

For recording every assignment, &c., over three hundred and under one thousand words, two dollars.

For recording every assignment, if over one thousand words, three dollars.

For copies of drawings, the reasonable expense of making the same.

SEC. 15. And be it further enacted, That upon filing a proper petition and the payment of one hundred dollars by any patentee or assignee of a patent, after such patent shall have been extended as provided in the eighth section of this act, the Commissioner of Patents shall cause notices to be published in like manner as heretofore required in cases of applications for extensions of patents. Every notice of this kind shall state that application has been made by the petitioner to have his patent confirmed, and shall notify all persons opposed to such confirmation that they may appear by a certain day therein fixed and make objection thereto. Such objection may be made in like manner as heretofore prescribed in cases of applications for extensions, and testimony may be taken as heretofore taken in cases of extension. If no sufficient objection is made the patent shall be confirmed, and a certificate of such confirmation shall be endorsed thereon; and after such confirmation the patent shall not be liable to be called into question, except by a direct proceeding as hereinafter provided. In prosecutions for infringement after such confirmation the defendant shall not be permitted to show in defence that the patent was invalid. But in cases where justice and equity require delay of such prosecution until a suit to set aside a patent can be determined, the court before which the prosecution for infringement shall be pending shall have power to grant a stay of proceedings for that purpose.

SEC. 16. And be it further enacted, That within one yrea from the date of such confirmation a direct proceeding may be instituted to set aside the patent in the manner hereinafter provided; after the end of which time the patent shall only be liable to attack for fraud, or for other causes which would enable a court of equity to set aside the judgment or decree of a court of law or equity. And after the end of three years from the discovery of any fraud, or from the existence of any other defect, such defect is cured.

SEC. 17. And be it further enacted, That within one year from the date of the confirmation of any patent as above contemplated, or at any time during the life of any other patent not so confirmed, any person may file a bill in equity in any of the district courts of the United States where the patentee or his assignee resides, to annul such patent. The plaintiff in such suit shall notify the Commissioner of Patents of the commencement of such suit, and shall pay into the Patent Office the sum of fifty dollars, and thereupon the commissioner shall cause notice to be published in like manner as heretofore prescribed in cases of applications for extension of patents.

Any person may make himself a party to such suit as plaintiff by notifying the clerk of the court of that fact, after which he shall be entitled to be treated as a party in all respects. The court may make rules for taking depositions as well as in regard to all other points of practice and procedure not otherwise regulated by law; and if upon the trial of the cause the court shall be satisfied that any person who is a plaintiff in such proceeding in acting in collusion with any person interested in the letters patent, the court may in its decree order that the cause be dismissed, without prejudice to the right of any other person to file a subsequent bill to repeal the same letters patent.

SEC. 18. And be it further enacted, That the mode of serving the defendant with process may also be fixed by the court, and if the defendant cannot with proper diligence be found in the United States, the notice published by the Commissioner of Patents, as aforesaid, shall be deemed a sufficient service; and if the defendant, when served with process in either of the modes above contemplated, shall fail to appear, default may be entered against him, and a decree rendered accordingly. The party filing the bill shall be liable, in the first instance, for all the costs of suit, but these may

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be collected by him from the defendant, if successful. If unsuccessful, or if they cannot be collected from the defendant, all those who have made themselves plaintiffs shall be required to contribute their equal proportion of such costs. The costs of taking testimony shall be paid, in the first instance, by the party for whom the testimony is taken, and be collectable finally from the unsuccessful party, and be apportioned in proper cases among all the plaintiffs. Any case of this kind may be taken to the Supreme Court of the United States by either party, on appeal, at any time within one year from the final decision in the circuit court, in the manner as the Supreme Court shall prescribe. If the decision in the circuit court is not appealed from, as above provided, it shall be final; and such decision, or the decision of the Supreme Court, annulling or confirming such patent, shall be forever conclusive as to the validity of the patent.

SEC. 19. And be it further enacted, That the salary of the Commissioner of Patents, shall be the sum of——dollars per annum, and the salary of the chief clerk shall be the same as that of a principal examiner.

SEC. 20. And be it further enacted, That the Commissioner of Patents be, and he is hereby authorized to contract, for a term not exceeding four years, for a sufficient number of copies of the descriptions, specifications, and drawings of the current patents, as they are ordered to issue, as will supply the office for all purpose of reference, and for certified copies which are now by law furnished by the Patent Office and for distribution, not exceeding four thousand copies of each patent: Provided the entire cost thereof shall not exceed five cents per copy.

SEC. 21. And be it further enacted, Thatthe Commissioner of Patents shall distribute to each and every district court of the United States a copy of each letters patent, upon which the seal of the Patent Office shall be impressed, which shall be held to be competent evidence of the subject-matter of said letters patent in all cases in which the original letters patent could be evidence; and certified copies of any patent shall be furnished to any applicant therefor, on the same terms as the written copies are now furnished, and have the same effect in law as written copies, as provided in the fourth section of the act entitled "an act to promote the progress of the useful arts, and to repeal all acts and parts of acts heretofore made for that purpose," approved fourth July, eighteen hundred and thirty-six.

SEC. 22. And be it further enacted, That all the copies of the record herein provided for shall be executed in the Patent Office by contract, under the direction and supervision of the Commissioner of Patents, and no official original paper shall be taken from the office for that purpose.

SEC. 23. And be it further enacted, That any person who may have contrived and constructed any form for a casting which will require a new mould, matrix, or pattern, or any form for an article of manufacture or commodity, which may itself be used as such matrix, mould, or pattern for a casting, or which may in any other manner be copied from in such a way that the copyist can derive a direct and evident advantage from the labor, skill, or ingenuity of the maker or contriver, may, by having the same registered in the manner hereinafter provided, obtain a registry patent therefor. Application for such patent must be made to the commissioner in the usual way. The oath must state that the applicant himself, or by his agent, did devise and construct the article or commodity which is the subject of the patent he is seeking; and all the other regulations and provisions which now apply to the obtaining or protection of patents for inventions shall apply to applications under this section, as far as in their nature they may be deemed applicable, and so far as they are not inconsistent with the provisions of this act.

SEC. 24. And be it further enacted, That no suit shall be brought for the infringement of any registry patent unless the word "registered," with the date of such registry, be conspicuously cast upon or attached to the article so registered, and all copies thereof made by the patentee or his assignee. And no person shall be held to have infringed such patent unless he shall have used the article registered as a mould, matrix, or pattern by means of which to manufacture a like article, or unless in some other way he shall have derived a sensible advantage to himself by copying from the article so registered or some portion thereof.

SEC. 25. And be it further enacted, That the Commissioner of Patents is hereby authorized to cause the drawings of all patents issued during the present and each succeeding year, or so much thereof as will show the exact point of invention in each case, to be suitably engraved, so that plates thereof may be prepared in season to accompany his annual report for the year on which such patent was issued: Provided, Such engraved plates shall not exceed in cost the sum of three dollars for each drawing so engraved, the expense to be paid out of the patent fund.

SEC. 26. And be it further enacted, That the circuit courts of the United States, in their respective districts, shall have jurisdiction in equity upon the application of any party holding letters patent of the United States for any new and useful art, machine, manufacture, or composition of matter, or having any sectional interest therein, to issue injunctions, both temporary and final, to restrain and prevent the importation and sale of any article or articles the product of the same or substantially the same art, machine, manufacture, or process of compounding matter, made in any foreign territory adjoining or near to the United States, and introduced into the United States for the purpose of traffic: Provided, That before any such injunction shall be granted the complainant shall offer in evidence satisfactory to the court that such article or articles was or were made by an art, machine, or process of manufacture, or of compounding matter, which, if used or exercised within the United States, would be in contemplation of law an infringement of the letters patent under which he claims. And upon a proper bill filed for the purpose aforesaid the said courts shall proceed in all respects according to the rules and principles which govern the said courts in granting injunctions to restrain and prevent infringements of letters patent in other cases, and shall grant appeals from all final decrees rendered therein, in like manner as appeals are now required by law to be granted in other suits in equity to restrain and prevent infringements of letters patent.

SEC. 27. And be it further enacted, That if, upon the final hearing of any bill filed as aforesaid, it shall appear to the satisfaction of the court that the respondent has in his or her possession any article or articles which, upon the principles of the foregoing provision, are liable to an injunction for the purposes of traffic, the court in its final decree shall adjudge the same to be forfeited to the use of the complainant.

SEC. 28. And be it further enacted, That in all suits in equity hereafter brought to restrain and prevent the infringement of letters patent, whether under this or any former act, it shall be competent to the court having jurisdiction of the cause to inquire into the damages sustained by the complainant, either by a reference to a master, or by directing an issue to a jury, as the circumstances of the case may require, and to award the same to the complainant in the final decree, and therein to treble the amount of such damages so ascertained in like manner as the courts are now authorized to treble the amount of damages found by a jury in actions at law. And the court shall have like jurisdiction in equity, to inquire into and decree the damages sustained by the complainant in consequence of a past infringement where letters patent have expired, as in cases where the bill seeks for an injunction to restrain the infringement of letters patent which have not expired.

SEC. 29. And be it further enacted, That no person who is the actual inventor of any patentable subject, and who is the first to perfect and make that invention public, or who is the first to apply for a patent therefor, shall be defeated in his endeavors to obtain a patent, or to enjoy the benefits thereof, by reason of a previous invention of the same thing by another person, unless such previous inventor had used due diligence in perfecting his invention, and when so perfected, had, without unreasonable delay, applied for a patent therefor, or brought the invention into public use.

SEC. 30. And be it further enacted, That all acts, and parts of acts, heretofore passed, which are inconsistent with the provisions of this act, be, and the same are hereby, repealed.

[For the Scientific American.]

Meteorological Calculations.

A Table of Meteorological Calculations made for the months of July, August, and September, 1854, showing the time of passage of atmospheric influences, and also their average velocity of movement in miles per day; continued from page 240 of your present volume:

	Time of passage.	Velocity of movement.	Classification of influence.
July	2, 4 A. M.	1018	4
	3, 12 M.	931	6
	12, 2 A. M.	795	4
	18, 2 "	943	7
	19, 5 "	1016	4
	22, 3 P. M.	850	3
Aug.	2, 2 "	813	4
	5, 7 A. M.	990	2
	5, 8 "	1020	1
	12, 6 "	845	2
	22, 5 P. M.	996	4
	22, 8 "	987	7
	23, 11 "	830	1
Sept.	3, 3 "	769	5
	9, 1 A. M.	1010	4
	9, 3 P. M.	930	1
	18, 10 "	834	4
	25, 8 "	1014	2
	27, 11 A. M.	698	7
	28, 9 "	920	4

REMARKS—In the classification of influences, No. 1 is of the greatest power. The calculations are made for lat. 40°, long. 6° West from Washington. The average velocity of the movement of the influences for the three months ending September 30, will be about 910 miles a day—being 46 miles more than the general average (864),—54 miles above that of the first quarter of the year, and 18 miles over the general average of the second quarter.

The condition of the atmosphere requisite for the condensation of vapor is established by the passage of atmospheric influences, and this condition depends upon atmospheric ascension. Whatever may first induce expansion of air, or give it an ascending tendency, we know that air, when once expanding, ascends, and in ascending a portion of its vapor is condensed,—in this condensation, though limited at first, latent heat is set free, together with invisible light and electricity. As the ascending current increases by the action of these liberated properties of air and vapor, the extent to which it may be carried terminates in the devastating tornado.

There are three modes of electrical discharge—the convective, luminative, and disruptive The convective, in which the fluid tends to an equilibrium by being carried on intervening particles of matter. The luminative, in which it passes through a conducting medium by moving from one particle of matter to another, and the disruptive in which a current breaks through a non-conducting medium, and restores, instantly, the equilibrium. The convective discharge is never attended with the manifestations of light—the continual glow accompanying the luminative discharge, and the lightning flash, or spark of the disruptive, are referable to that property of matter which, when in motion, is termed light.

The convective discharge is common in winter—in mild and moist temperatures, and in ascending currents of air. The innumerable causes of the various disturbances in the electrical equilibrium require the convective mode of discharge to be constantly taking place around us: every physical action, whether animal, vegetable, or chemical, calls it into operation.

Sometimes, and especially in storms and tornadoes, the convective discharge facilitates the movement of the ascending current caused partly by solar heat, and the evolution of latent caloric; for as the electricity accumulates in a region of air, either by convection or by being liberated in the process of condensation, there are negative regions around and above, that receive the excess when the electrical tension is sufficiently excited to induce the disruptive discharge. Thus, from one region of air to another, and from cloud to cloud, the fluid disseminates in its neutralization. When continually passing, in this way, from its place of liberation, there can be no check or subsidence to the ascending current; but in tornadoes, when the electricity carried up by convection, and that liberated by condensation, accumulates so rapidly, and in such quantities, that it cannot pass off above, it necessarily must return to the earth.

The alternate violence and subsidence known to characterize tornadoes, depend upon the electric fluid being alternately carried up or set free, and then returned to the earth by the luminative or disruptive discharge, which not only restores, instantly, the electrical balance, but leaves the further continuance of the storm for the next instant depending on the action of the continued evolution of latent caloric.

To the luminative discharge belongs the phenomena of the Aurora Borealis, Storm Lights, and the alternate light of the tornado; all of which are similar to the phenomena of the disruptive discharge, but on a diminutive scale. In the luminative discharge, the congregated objects of neutralization are comparatively in contact with the objects of the disruptive discharge proper. In the first, the fluid in passing from one particle of matter to another is accompanied by light made manifest by motion. Thus by a continued transfer of electricity from innumerable particles of matter to others, the fluid passes through space, keeping up a continual glow of light by the repetition of a similar action. In the second, or disruptive discharge, the flash is vastly more magnificent, and the objects connected in equilibrium are more remote.

If electricity is not liberated in ascending currents of air there could not, possibly, be so much returned to the earth by the disruptive discharge, as is known to be in storms; for during the prevalence of a storm, or tornado, the source of supply would depend on the earth only, and the negative condition of the upper strata of air required to take it up, would not, under any circumstance, permit its return.—Therefore, the assertion that electricity is liberated in the condensation of vapor, in the same manner and by laws similar to those by which caloric is set free, and that the disruptive discharge in tornadoes near the surface of the earth, always passes from the cloud to the earth, is founded on fact, and in harmony with every known law of physics. J. HALL.

Athens, Ill., June 24, 1854.

Improved Fire Arms.

Among the more recent applications for patents there is one by Joseph C. Day, of Hackettstown, N. J., setting forth certain improvements in fire arms as suggested to his mind. The connections between the breech and barrel of the gun which he proposes to construct, are made in about the usual mode, as also the appliances for loading and the supplying of caps. But he has arranged a spring at the mouth of the cap tube, whereby the caps are severally held in position, as delivered from the feeding tube, until the hammer strikes them down upon the nipple.

Soldering Salt.

CHLORIDE OF ZINC AND AMMONIUM—Vessels may be tinned with this salt without previsously cleansing their surfaces. It is made by dissolving 1 lb. zinc in muriatic acid, adding 22 ozs. salammoniac to the solution, and evaporatting to dryness; the yield is 2¼ lbs. of the double salt. To use it, the salt, moistened with water, is brushed on the surface to be tinned, a little solder laid on it here and there, and the surface heated until the solder fuses, when it flows wherever the salt was put, and unites with the metallic surface.

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New Inventions.

Improved Printing Press.

A person not familiar with the wonderful improvements in the "art preservative of all arts," which have marked the last quarter of this century, and had retained in memory the pictures of the presses used twenty-five years ago, as representatives of the present state of printing, could not be otherwise than astounded by a peep into any of our more extensive printing establishments, not to name the shops of our press manufacturers. And yet, with all the acknowledged improvements effected of late, there would appear to be room, still, for all that inventive genius and artificial skill may be able to effect. Acceleration of the speed of the press is the great desideratum, it being very desirable to keep publications back till the latest possible moment compatible with a regular distribution of the printed matter. Particularly is this the case with respect to the daily press. But saving of labor is of course an important consideration in presses as in all other inventions of art.

A quite recent improvement in printing presses was patented last week by George P. Gordon, of this city. As this machine belongs to a highly important class, we propose to give a careful condensation of the inventor's own description. In the first place, Mr. Gordon proposes the employment of a fly with a reciprocating rotary motion. This is so arranged as to relieve the type of the sheets, which it piles on the board. In the second place he secures two distributions to the rollers for each impression, from a single inking cylinder. One of these is given before the passage, the other prior to the re-passage of the form. In the third place he relies on an ingenious combination of the spiral spring, the connecting rod, and the crank motion for operating the bed or carriage of the press.

Improvements in Tables.

We have before us two sets of specifications relating to these important domestic appliances. One of these has been sent in by J. W. Mahan, of Lexington, Ill., the other by T. G. Brown, of Norwich, Conn. The first-named inventor claims to have accomplished a combination of capacities in the inanimate dining table, whereby the ordinary need of human service may be entirely dispensed with during these interesting attentions to the inner man, classed as breakfasts, dinners, and suppers. In plain terms, he proposes a dining table which shall wait on itself, while keeping at bay all those annoying intermixers known as house flies.

The other specification referred to, (Mr. Brown's) presents a plan for the construction of table materials. He uses a glass plate for a slab, which he places in a frame in which there is a receiving rebate. By covering the side of his slab with a variety of transparent and reflecting substances, such as fish scales, broken glass, smalt, &c., mixed in oil, and applying coatings of copal or other transparent varnish, he simulates a variegated surface, which he describes as of rare beauty. Leaf metals may also be used where it is desirable to give tables, or other furniture manufactured in this way, a more costly ornamental finish.

Improved Tenon Machine.

The great difficulty to be overcome in tenon machines now under notice has been the expense of time and labor, occasioned by shifting the timber from its positions, and often the employment of two machines on the same piece of work. C. P. S. Wardwell, of Lake Village, N. H., has proposed to obviate this with an improvement which shall combine all requisites in a single machine. His plan consists in a peculiar arrangement of vertical saws for squaring the end of the rail, and for forming the shoulders, and horizontal saws combined for cutting the tenons themselves, whereby a reversal of the rail is rendered unnecessary. By the addition of one or more cutters between the horizontal tenon saws, working in combination with the shoulder saws, the capacities of the machine are greatly increased. A suitable number of nuts and set screws, to keep these saws in the places to which they are shifted to secure the desired angles of cut, completes the arrangement.

Self-Acting Railroad Switch.

It is a celebrated saying that he is a real benefactor who can make two blades of grass grow where one grew before. If this be so what will be the benefaction of an invention which shall reduce the destruction of limb and life by railroads to even one half of the present amount? Truly may all such inventions as that indicated by our caption be classed among the more merciful inventions of the day. Thanks, then, to William H. Whitney, of Abington, Pa., for a well-promising invention, for which he seeks for a patent, and by which he proposes to furnish the plan of a self-acting and self-adjusting railroad switch, whereby switchmen may be dispensed with altogether, and tireless and sleepless iron-nerved guardians of life and property made to take their place.

IMPROVEMENT IN SPARK ARRESTERS.

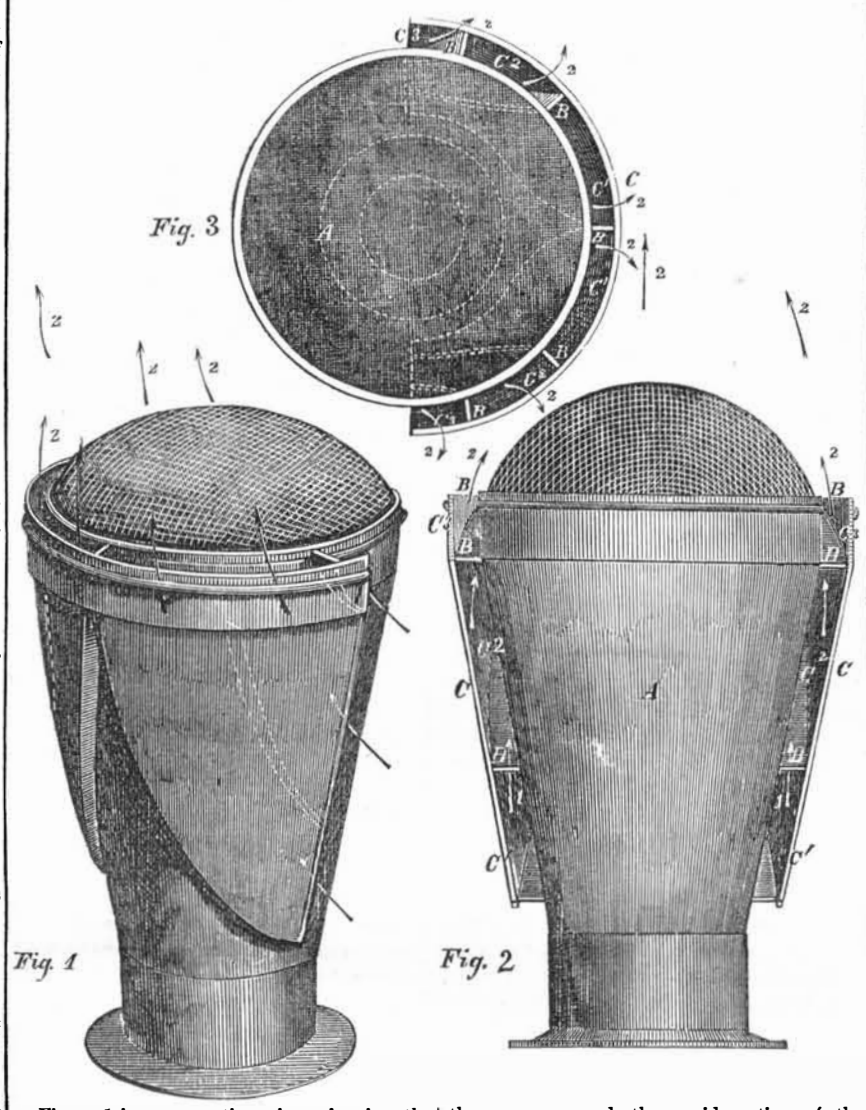


Figure 1 is a perspective view, showing the back of a new Spark Arrester; fig. 2 is a front elevation, and fig. 3 is a top view. The same letters indicate like parts.

These views illustrate an improvement in the spark arrester of locomotive engines, by T. E. Rollins, of Hornellsville, N. Y.. who has taken measures to secure a patent for the same.

The object of the invention is to carry the sparks and smoke which escape from the locomotive so high above the chimney as to prevent them annoying the engineer or passing into the cars.

A represents an ordinary spark arrester; B B B, and C C, represent the new attachment applied to the same. This consists of a series of ribs, B, placed spirally round the outer periphery of the case, A, and covered by sections C C, of an outer semi-circular case or shell, as represented. By thus arranging the ribs and covering them by the sections, C C, a series of passages, C′ C′, C^2 C^2, and C^3 C^3, are formed. The passages, C′ C′, commencing on the sides at the bottom of the conical case, A, and winding round in a spiral direction until they meet each other at the top of the case, and the passages, C^2 C^2, commencing a short distance above those, and winding round in an upward direction, and terminating in the passages, C′ C′; and the passages, C^3 C^3, are formed above C^2 C^2, and wind round a short distance and terminate at the top of the case. Each of the curved ribs, by its peculiar arrangement, serves as a stop to prevent the air escaping from one passage into the other, until it arrives near the top of the case.

The front and lower ends of the passages are open, consequently a large quantity of air passes into them, as the train rushes along through the atmosphere, and by reason of the shape of the passages and the rapid motion of the train, the air is made to flow upwards, and as it escapes, it comes in contact with the sparks, and gives them a whirling upward motion, carrying them far above the top of the stack;—this prevents them from rushing into the vacuum formed behind the train.

The arrows, 1, show the manner in which the air passes into and through the passages. The arrows, 2, show the course of the air, smoke, and sparks, after arriving at the top of the smoke stack.

More information may be obtained by letter addressed to the inventor, at Hornellsville.

New Steam Brake.

Henry Miller, of this city, has made a contribution to the already long list of railroad appliances, which claims to be an improvement in the application of steam and compressed air to brakes. The principal features of this inventor's plan consist in working the brakes of each car of the train with a separate cylinder, which is supplied with steam by a pipe running from the boiler or from some air pump. Stop-cocks connect with each brake, in order to let on the motive element when desired. The continuity of the pipe throughout the train, is accomplished by flexible connections with each car.

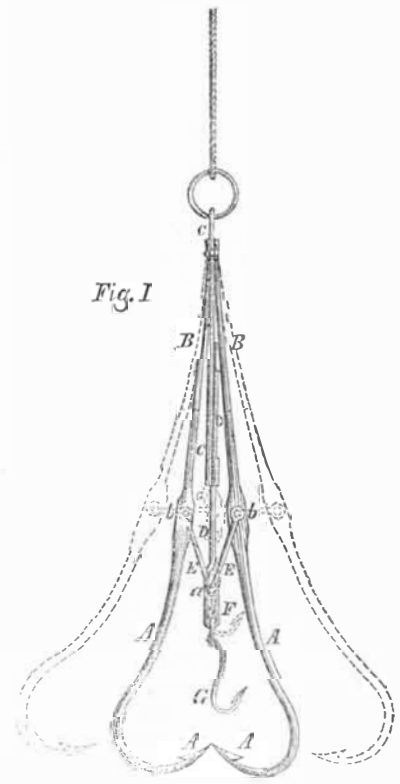
Improved Roving Tube.

In this machine, as usually made, an eye is placed in front of the tube proper, for the purpose of twisting the sliver and forming the roving. Edmund W. Dean, of New London, Conn., has made an improvement, in which he proposes to substitute, for the usual eye, a "variable elastic mouth-piece." This is made to take a hold on the sliver sufficiently tight to insure the requisite twist. Needless friction is thus avoided, and two other advantages gained, according to Mr. Dean's specifications, viz., the exact regulation of the condensation of the roving, and greater facility in repairing, should a break occur while the tube is in motion.

Improved Fish Hook.

This engraving represents an improvement in Spring Fish-Hooks, for which a patent was granted to Henry Sigler, of Houston, Texas, on the 11th of last April. These kind of hooks for fishing are made double, the dotted lines exhibit the hooks when set, aud the dark full lines, when closed. The top portion of the main hooks are made elastic, and so attached to vertical guide pieces, that they are made to serve as springs for forcing them together, with two toggle arms; they also form a toggle joint for forcing the hooks apart and retaining them set, for a given time. In combination with these devices, a *common* bait hook is employed, which is attached to the lower end of a regulating slide, and so situated that its end is some distance above the spring hooks, by which arrangement the fish has to thrust his head between the latter to reach the bait, in drawing upon which, the toggle arms are forced out of their horizontal position, when suddenly the two spring hooks are forced together into the body of the fish, thus securing it beyond the possibility of escape. A A are the spring hooks; B B are the upper parts made of thin spring metal. They are secured to a vertical flat guide piece, C, which has two brackets or guides for the sliding piece, D, which moves up and down as the hooks are forced apart or drawn together. This slide has two broad sides on its lower end for the toggle arms, E E, to fit upon at F, and be fastened with an axis pin. The other ends of the toggle arms are secured to the hooks, A A, by axis pins, *b b*. G is the bait hook, it is attached to the lower end of the slide, D, a short distance above the barbs of the spring hooks.

The hooks being set in the manner shown by the dotted lines, the shoulders, *d*, prevent the toggle arms from rising above the horizontal line. The small hook being baited, it is evident that when a fish snaps the bait and pulls on it, that the toggle arms, E E, will be forced from their horizontal line, and will suddenly act with great power as toggle levers, forcing the two spring hooks, A A, into the body of the fish, by which means it will not only be



caught, but cut into and *cut under* as certain as Texas grows excellent cotton.

More information may be obtained by letter, addressed to the inventor, at Houston, Tex.

Progress of Science.

A letter from one of the officers of the Japan expedition, says:—"The Japanese have been delighted and astonished with the movements of the locomotive and rail-car, and some of them have held conversations with one another by means of the magnetic telegraph."

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Scientific American.

NEW YORK, JULY 8, 1854.

Review of the New Patent Law.

During the past ten years, a number of Conventions, composed of inventors belonging to different parts of the country, have been held in various places for the purpose of discussing the defects of our present Patent Laws, and instituting measures for reforming them. Committees of gentlemen, distinguished for their experience in patent matters, were appointed by those Conventions for the purpose of draughting such Bills, (and presenting them to Congress through the proper channels,) as in their judgment would effect the desired objects. Two Bills were adopted by separate Conventions, and these with slight amendments were brought before the Senate. With some alterations, either of these Bills might have answered a good purpose, but it is a singular fact, that both of them, although expressing the sentiments and opinions of a large number of inventors, have been suffered to fall to the ground, while a new Bill—which will be found on another page—has been introduced into the Senate, unsolicited by, and unknown to but few, if any, of our inventors. It always affords us pleasure to see our legislators consulting the interests of such a worthy class of men as our inventors, for we well know that whatever protection is afforded, and whatever privileges are granted them, the benefits ultimately redound to the whole people. The *New Bill* contains many very excellent provisions, and these we desire to see become the law of the land. On the other hand, it contains so much that is hostile to the interests of inventors; so anti-democratic in its nature,—so confused and so curious—so complex and so confutable, that we hope and believe Senators will strike the same out of the Bill upon further examination.

The first twelve sections are very good; the 10th, in relation to returning models of rejected applications, is one we have always advocated. The last clause of the 12th section, however, we think, is decidedly bad. Instead of increasing facilities for inventors in conducting business with the Patent Office, it takes away from them certain rights, which they have enjoyed since the first patent law was enacted, more than sixty years ago. The objectionable clause confers authority upon the Commissioner of Patents, to admit only such persons to become patent attornies, as *he may deem* qualified to act for inventors, and that none will be allowed so to act unless by license received from him.

The strict rendering of this clause would prevent competent inventors from acting as their own agents and would take away all power from inventors to select those persons whom they may deem most capable of acting for them, unless they have received a license from the Commissioner of Patents, to practice in his Court. We advocate the greatest liberty of the people consistent with intelligence and good morals, and we believe that every man who is competent, has the natural right to act as agent for another in any capacity whatever, without being dependent on the *ipse dixit* of a third party. Every inventor has the perfect right to select the person whom he deems most competent to present his case to the Patent Office; that right, we hope, will never be taken away; that liberty we hope will never be abridged. Such a power in the hands of some Commissioners of Patents might make the Patent Office a huge political machine, dangerous to the interests and subversive of the privileges now enjoyed by inventors. Such a *one-man* power is greater than that exercised by any court in the United States, and is totally at variance with democratic principles.

But if Senators desire to retain this clause, let it in all honesty be so amended so as to specify the qualifications necessary to practice as a Patent Agent, the mode of examination, &c.; for surely it would be despotism in the extreme, to deprive any man who can prove his competency, from practicing as a patent agent, thereby making such a profession an exclusive order, like that of the Knights of the Garter, or the Round Table.

We hope, however, that the clause will be stricken out entirely, it is enough for the Patent Office if an application for a patent is correctly drawn up and properly presented. No more has hitherto been required, and no more is necessary.

We also object to those parts of sections (12 and 14) which provide for the payment of a fee of $10 on an appeal from a lower to a higher officer of the *same* court—from the Assistant to the Commissioner of Patents. We also consider that the increase of inventors' fees, by the plan proposed in section 14, is a poor method of increasing the revenue of the Patent Office. Thus it is proposed that an applicant for a patent with two claims, shall pay $30 down, and $15 when the patent is issued, making the fee $45. The payment of an additional fee for each claim will create a great deal of trouble to inventors, and can be made a ready method of extracting their hard-won cash. For example, if an application were presented embracing five claims, as is oftentimes done, this would require a fee of $70 down, and then the Patent Office might reject them all but one, and pocket $40, without returning any equivalent; this would be rank injustice. We also object to the paltry sum of twenty-five cents being charged for every hundred words above 1000, in a specification. We also object to the increase of fees for copying from the present rate of 10 cents to 12½ for 100 words. This is a regular grocer's system for catching half cents.

We really do not well know what is best to say of section 15: it is so new and so droll. This new system of "Confirmation," we think, should be left to those religious denominations that maintain such church policy. We are certainly adverse to any usurpation of religious ceremonies by our Patent Office, especially when the object is *filthy lucre*—no less than $100. The *confirming* doctrine means, that after a patent has been in existence five years, and extended (upon paying $100) for fifteen years, then, upon paying another $100, and the very same proceedings gone through with as when the patent was extended, it will be *confirmed*. Well, what does this Confirming doctrine amount to in favor of an inventor? Nothing but a ceremonial palaver, to get an extra $100 out of him. At the same time it would amount to this on the part of the Patent Office, that every patent issued under its seal, subscribed by the Secretary of the Interior and the Commissioner of Patents, would be considered an illegal document until it was Confirmed—that is, until it has grown up to be five years of age, and paid $200, exclusive of first fees, into the Treasury. We hope the Senate will strike out all the Confirming doctrine, or refer it to some Bishop for further amendment, to clear up the smoky doctrines embraced in the 16th and 17th sections, especially the last clause of the 16th, which provides for the *curing of a fraud after it becomes three years old*. We also object to the 2nd clause of section 17: it provides that when a person enters a suit to annul a patent, he must pay $50 into the Patent Office. What business has the Patent Office with any such fee, when it gives no services in return. We also object to that part of the 18th section which makes the owner or defender of a patent liable to costs. This should never be, except in the case of fraud, for if an inventor obtains a patent in all honesty, and another person sues to have it annulled, because, as he believes, he can show that the subject patented is not new, would it be just for the owner of the patent to be compelled to pay the plaintiff's costs?—all costs, as the Bill says? By such a law a wealthy plaintiff might run up a bill of costs high enough to swamp all the property owned by three-fourths of our inventors.

Sections 26 and 27, which provide for property in things (products of a patented machine) not patented, if made abroad, is opposed to all the laws of commerce, and would lead to endless troubles. We could advocate the measure so far as it relates to the British Provinces until they provide laws for Americans taking out patents in those countries; but to carry out the principle so blindly inserted in these sections, if a sewing machine were patented here, and the inventor took it to England, patented it there, and sold his right, he could stop the sale of coats, vests, and pants in this country, if made by the very machine for which he was paid in full. This section certainly requires amendment.

We object to section 28, so far as it confers power on Courts of Equity, to decree and award damages. We have no desire to see our Patent Laws placed above and made more stringent than "Common Law."

The 29th concluding section is excellent; it provides for the settlement of all disputes about musty testimony relating to priority of inventions, and places the question upon a proper basis.

The Bill, as a whole appears to be a powerful instrument for increasing the revenues and powers of the Patent Office; and the means proposed for these purposes are exceedingly complex and anti-republican. Instead of simplifying the Patent Laws, it makes them more obtuse and complicated. If the revenues of the Patent Office are insufficient for conducting its business promptly and properly, let the universal fee be raised to $40 or $45, this, for 2673 applications would increase the revenue to $56,730 or $40,095 more per annum. This would be a more simple and commendable plan than piling on the assessments for claims, and the "*clap-trap*" advances for *Confirmations*.

Objections to the parts specified of this bill, have so crowded upon us in examining them, that we have not been able to find room for presenting one tithe of the arguments that might be advanced. At some other time we may return to the subject; but at present we appeal to Senators to give this matter a calm and unhurried examination, and pass only such a Bill as will be a credit to themselves,—a wise and just measure to benefit inventors and the people at large.

New Use for Buckwheat Straw.

We have seen it stated in some of our foreign scientific exchanges, that the straw of buckwheat has been used in Russia for a number of years, as a substitute for quercitron or yellow oak bark. This will tell against the American importers of this bark, if it be found in Europe that buckwheat straw answers as well in dyeing. We do not know how much quercitron is now exported, but the quantity cannot be small; still we think it is not so large as it was thirty years ago owing to the extended use of the bi-chromate of potash since that time, for dyeing yellows on cotton fabrics. Quercitron, or yellow oak bark, is an American dyewood, discovered by Dr. Bancroft, of London, while in America before the Revolution. It was, and is now employed in dyeing yellow on woolen, silk and cotton goods, also for dyeing green on a blue ground. The latter color is produced on cotton by dyeing the fabric a blue color in an indigo vat, then preparing the cotton for the bark decoction with pyroligneous acid, or a preparation of alum and the acetate of lead. The bark is scalded or boiled and the goods handled carefully in the clear liquor for half an hour. To dye yellow with quercitron bark, it is only necessary to scald some of it in a clean vessel, and use the clear decoction, by placing it in a boiler, bringing it up to the boil, and using a small quantity of the sulpho-muriate of tin in the liquor. The goods receive two or three dips in the liquor—each dip requiring about 15 minutes handling—then an airing. Cotton and woolen goods are boiled in the bark liquor, but silk goods are not boiled, they are merely handled in scalding hot liquor. This bark makes a very beautiful color, but if buckwheat straw will answer as good a purpose, our farmers can use it for dyeing yellows and browns, in the same manner as bark, only it will be more convenient for them to use alum in place of the sulpho-muriate of tin, as the mordant. It is a well known fact, that quercitron bark was exported from Philadelphia for many years to England, and used there for dyeing yellow, before the secret of its use was known at home.

A New Technical Dictionary.

Although there have been quite a number of dictionaries of Science and Art issued by home and foreign presses, there is not one that we can think of as satisfactory in all respects. They are either too cumbrous in their materials, because devoting too large a space to some particular department of art or science, with whose details the author happened to be familiar, while deficient in other departments, perhaps omitting some words altogether; or, what is worse, they present the mere rehash of the crude, unassimilated, contents of previous works of the same class, without a single studious effort to add anything which the rapidly accumulating wants of the present era may have called forth—for, with the rapid improvements which inventive talent and industrious art are making at the present day, there must necessarily be many additions to the very terms of science and art, in order that the ideas of the inventors shall have fitting forms of expression.

It is in view of this state of things that we have always extended a friendly recognition to the various attempts to meet the wants of science and art in this respect. And it now gives us special pleasure to announce that M. Gardissal, our agent in Paris, has in hand a work to whose appearance we look forward with hope. It is to be a TECHNICAL DICTIONARY, in three volumes, the first of which has, as we learn, already been put to press. The first volume will range French, English, German, the second English, French, German, and so on. In getting it up M. Gardissal has the valuable co-operation of the brothers F. and A. Tolhausen, practical engineers, which fact is a guarantee of the accuracy of the more practical features of the work.

We think we can promise that the American price of M. Gardissal's work will not present any barrier to its general accessibility, as has been the case with most similar publications. The agency for this country will probably be in our hands, and in a great measure under our own control.

Life Preserver Seat.

We learn by our Washington cotemporaries, that some very successful experiments have been made at the Navy-yard in that city, in the presence of a number of naval officers, with the life-preserving seat of N. Thompson, of this city. This seat forms a ship stool of the usual size, convenient, neat, and substantial, and can be converted into a life-preserver in a moment, by moving two brass slides, which allow it to divide and open, and then by moving the slide a few inches more, they hold it firmly in that position. It then forms a strong frame, with a capacious air chamber at each end, and the person is supported in the water without effort, the sides coming up under the arm-pits, and leaving the arms and legs free. An experimenter, who had never before seen the apparatus, threw himself with it into eighteen feet water, and managed it in many ways with perfect ease.

Deaths.

Madame Sontag, the famous vocalist, died of cholera on the 16th ult, while in the city of Mexico.

Josiah Holbrook, who was for a long period a resident in this city, and was engaged in professional pursuits to simplify science—especially geology—to the capacity of youthful minds, was drowned a few weeks since in Virginia. his body having been found in Black Water Creek, as we learn from the Lynchburg "Virginian." It is supposed that he met his death by falling down a cliff while searching for geological specimens.

Massachusetts Boots and Shoes.

The Boston Atlas, in an article upon the vast extent of leather manufacturers of Massachusetts, says: "To give an idea of the magnitude of this branch of trade, it will be sufficient to state that Massachusetts makes every year, very nearly two pairs of shoes for every man, woman, and child in the United States."

That is 48,000,000 of pairs.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 27, 1854.

FURNACE OF STEAM BOILERS—Jonathan Amory and W. P. Parrott, of Boston, Mass.: We claim conducting off the carbonic acid gas, or other heavy and incombustible gases, which check combustion, by means of a pipe which communicates with the bottom of the furnace at or near one end of the same, and with the smoke pipe or flue, as described.

CIDER MILLS—Jesse Bauman, of Shepherdstown, Pa.: I claim the use of the wheel provided with offsets or planes. and teeth or spikes, in combination with the springs for grinding the fruit.

Secondly, I claim the arrangement of the grinding wheel and springs, with the cam, pressing box, and pomace drawer, and spring, O, for the purpose of pressing the pulp and delivering the pomace, as set forth.

Lastly, I claim in the secondary mill the arrangement of the spring, concave, and cam shaped rasping wheel, or grinder, for the purpose of reducing the fruit to a pulp.

COFFEE MILLS—Chas. H. Beatty, of Wheeling, Va.: I claim adjusting the movable grinder of coffee or spice mills by a handle or lever composed of two parallel pieces and a tempering screw, as set forth.

GRAPE FRAME—J. O. Cross, of Kingsbury, N. Y.: I claim an adjustable elevating and depressing grape frame, with or without supporters attached, for the better cultivation of the grape, which is believed will secure all the advantages specified.

GAS AND LIQUID REGULATORS—T. H. Dodge. of Nashua, N. H.: I claim the employment for regulating the flow of gases and fluids of two chambers having communications at top and bottom, and being partly filled with water or other liquid, and furnished with a valve and float, arranged and operating as described.

GRASS HARVESTERS—George Esterly, of Heart Prairie, Wis.: I claim, first, the construction of the sickle in such manner as to have projections on alternate sections of the sickle sliding upon a bar, operating for the purposes set forth.

Second, I claim grinding off the raised or feather edge made by the chisel in cutting the sickle, as set forth

Third, I claim the attachment of a plow to the sickle beam. by a screw pivot to fit said plow to the surface of the soil, as set forth.

REVERSIBLE CAPSTANS—J. A. H. Ellis and Alex. Gordon, of Rochester, N. Y.: We claim the shifting spur wheel connected to the shaft of the capstan by feathers, and operated by a lever or its equivalent, for the purpose of reversing the direction of the barrel of the capstan, without reversing the direction of the sweeps, and giving said capstan an increased backward motion.

BREECH-LOADING FIRE-ARMS—J. Durell Green, of Camqridge, Mass. Patented in England, May 12th, 1854: I claim the self-adjusting thimble, constructed and operating as described.

I also claim the peculiar manner of locking the barrel to the breech by means of the wedge-formed ears and the hooks, in combination with the method described of controlling the forward and revolving motion of the barrel by means of the cylinder, the sleeve, and the spindle, the whole being connected together by the key, as set forth.

BANK LOCKS—Wm. Hall, of Boston, Mass.: I claim the slotted slides, which are allowed to arrange themselves upon the stepe of the former, to form the bits of the key in combination with the pin, or its equivalent, when the tumblers are operated by turning the key, whereby the tumblers are rendered inaccessible to any instrument that may be inserted at the open key hole, and the latter is closed whenever the key is turned so as to bring the slides to bear upon the tumblers.

SEED PLANTER—Daniel Hill, of Bartonia, Ind.: I claim the reversible directing board plane on one side, and furnished with converging slats or ridges on the reverse side, for the purposes of either drill or broad-cast sowing.

SUSPENDER ENDS—Julius Hotchkiss, of Waterbury, Ct.: I claim the double attachment or connection of the straps with the buckle, as set forth.

SEWING MACHINES—Walter Hunt, of New York City: I claim, first, sustaining both ends of the needle whilst moving the cloth to effect the feed by means of an inclined guide made adjustable and placed under or upon the shuttle side of the cloth, as described.

Second, I claim the rotary table top, in combination with the guides and ways underneath the same, all arranged and operating as set forth.

ROTARY CULTIVATOR—H. M. Johnson, of Carlisle, Pa.: I claim a system of sharpened disks or rotary colters. a part of which are armed upon their periphery with knives projecting laterally—said knives being set obliquely to the radius of the disk as described; the whole being combined and arranged in three several sets, so that the two sets armed with knives shall cut alternate sections of the soil as set forth.

DRYING CLOTH—D. W. Kennedy, of Staunton, Va.: I claim the reel constructed as described in combination with the hot air or steam drum arranged upon its shaft. whereby the cloth near the shaft may be dried equally with that upon the outer diameter of the reel, and thus equalize the shrinking of the cloth throughout its whole length.

MITER MACHINE.—George W. La Bau, of Jersey City, N. J.: I claim the combination and arrangement in the manner described, of the several specific parts or their equivalents, of the miter machine, without limiting myself to any particular arrangement of parts.

HYDRO-PNEUMATIC FORCE PUMP—Alexander B. Latta, of Cincinnati, Ohio: I claim, first. discharging the air from the cylinder before the end of the stroke of the piston to move beyond the end of the cylinder, and into the enlarged chamber, as described.

Second—Inclosing the top of the water chambers upward from the end of the cylinder to the discharge valve, in the manner set forth.

Third—I claim the protrusion of the piston from the end of the cylinder at the end of each stroke in combination with the upward inclination of the top of the chamber leading to the discharge valve, as set forth.

COFFINS—John McF. Lyeth, of Baltimore, Md.: I claim the method described of constructing marble slab coffins so that the joints shall be tight, and strongly secured to each other and to the bottom, and when raised by the handles, the weight shall come upon the bottom slab, as deseribed. the whole forming a new article of commerce not hitherto known, or used.

REGULATOR OF GAS BURNERS—Wm. Mallerd, of Brooklyn. N. Y.: I claim, first, the perforated cups or partitions, with their edged rings encircling the perforation in combination with the perforated disk valve and the pin points to support it.

Second, the series of two or more valve chambers, as described, with their thin valves, each succeeding valve having a smaller perforation than the preceding one, and a slight increase of weight, the whole arranged and operating as set forth.

Third, making the holes in the jet so as to burn at low pressure, in combination with a regulator.

GAS BURNERS—Wm. Mallerd, of Brooklyn, N. Y.: I claim, first, making the tip where the jet or jets of gas are burned of pure tin or other metals of which tin forms a large proportion, thickly coated with tin, for the purpose set forth.

Second, making the tube and inner portion of burners of tin or any metal thickly coated with tin, to prevent corrosion, and to avoid the use of solder.

Third. punching the holes through the tips or jets of the gas burners, instead of drilling or sawing, which can be done by a hand punch, but with more accuracy and despatch by a small machine.

DOUBLE-ACTING FORCE PUMP—J. H. McGowan, Jr., of Cincinnati, O.: I claim the combination of an air chamber communicating with the pump above all the valves, with a vacuum chamber communicating with the pump below all the valves, whereby the elevation of water is rendered more equable, and effected with a saving of power.

FRUIT PICKER—John Mellendy of Southbridge, Mass.: —I am aware that a fruit picker has been made of a common fork with two bent tines arranged on top of a pole, and a basket suspended underneath the tines, I am also aware that a fruit picker has been made of a cylindrical vessel placed on the top of a pole, and having its upper edge armed with angular teeth raised on it: I therefore do not claim any such contrivances: nor the combination of a bifurcated pole and a basket hung to it, as they do not offer the facilities for gathering fruit that are found in my apparatus, as the movement of the basket of it, up to the star-shaped separator, enables a person to seize the fruit, and remove it without bruising it against limbs or by its dropping too far or upon other fruit. Besides this, the instrument when among the branches of trees may be moved from one fruit to another, without the necessity of turning around, the fruit being gathered by it with less labor and care than by the other instruments to which allusion has been made.

But I claim the application of the star or serrated cover or separator, and the sliding basket on the pole, so as to extend entirely around it on the pole, and so that the serrated cover shall be stationary relatively to the pole, and the basket be made to slide or move towards and away from the cover. and be operated as specified. The whole construction and arrangement of the parts rendering the instrument far more convenient and effective, in use, and less liable to bruise or injure the fruit gathered by it, than any of the others to which reference has been made.

INHALING TUBE—Daniel Minthorn, of New York City: I do not claim inhaling tubes as new, I claim the bottle or flask with an air-tight stopper, and a tube with its lower and submerged into said fluid.

And lastly, I claim the inhaling tube in combination with the flask and tube.

CUTTING BRADS—Wm. J. Miller, of Cold Spring, N. Y.: I claim the arrangement of the vibrating shear in relation to the revolving shears or cutters, as connected, so as to change the position of the cutting edge of the vibrating cutter. and cause it always to stand parallel with the edge of each revolving cutter until the nail has been cut off, as set forth.

ROAD SCRAPER AND SPREADER—Thos. Penrose, of Ellington. Ill.: I claim the tail piece with its adjustable brace, when combined with a flat scraper having the points of attachment of its draught chains at its lower edge, as set forth.

CHARGER FOR FIRE ARMS—T. H. Peavey, of South Montville, Me., I claim the charger, consisting of the chambered cylinder confined between two plates. to one of which is attached a muzzle piece, or some suitable means of fitting it to the barrel, and furnished with a spring catch, or its equivalent, by which the chambers may be severally held in communication with the holes in the plates, and the muzzle piece, as set forth.

TRAP FOR ANIMALS—Oliver Pier, of Harmony, N. Y.: I claim the lever treddle, set, or fall, and the elbow catch latch, in combination with the single and double prong grapple, together with the folded spring, as described.

WOODEN BUTTONS—L. L. & A. L. Platt, of Newton, Ct.: We claim manufacturing wooden buttons by cutting the blanks from slabs, which are of a greater thickness than the buttons are intended to be, and reducing said blanks by pressure to the desired thickness for the purpose of forming durable and well proportioned buttons, as set forth.

MORTISING MACHINE—Hiram] & Simeon, H. Plumb, of Honesdale, Pa.: We claim cutting mortises by having two chisels forced gradually into the wood or stuff, and a reciprocating chisel or plane working between. The chisels cutting the ends of the mortise, and the chisel or planer cutting out the wood between them, the above parts being arranged and operated as shown, or in any equivalent manner.

WINNOWERS OF GRAIN—B. D. Sanders, of Holliday's Cove, Va.: I do not claim the valves or slides for regulating or modifying the blast in the several compartments of the blast spout, for they have been previously used, neither do I claim the spring traps, as they are well known.

I claim the combination of the inclined screen (next adjoining the feeding hopper) with the suction spout, subdivided into two or more compartments, the lower ends of the partitions extending downwards nearly to the screen, as set forth.

CARRIAGE AXLE—Wm. H. Saunders, of Hastings, N. Y.: I do not claim simply enlarging an axle at the root, as this has been done heretofore; but I claim the combination of a taper axle, having an enlargement at the root, with a box having a similar inside enlargement at its rear, and a diminution of size outside, provided with concentric rings or grooves for allowing it to be wedged in the hub, the whole being for the purpose of strengthening the axle without enlarging the box and enabling me to use smaller hubs with a sufficiency of wood therein to preserve the necessary strength, as set forth.

CALIPERS—Perley Seaver, of Oxford, Mass.: I do not claim the precise form nor the operating by a screw or spring, or their combination.

But I claim making the pieces with the projections, when combined with the cam and its nut, and operating substantially as described.

GRINDING MILLS—Isaac Straub, of Cincinnati, Ohio: I claim the combination of the permanently adjusted tram blocks, for supporting the upper stone, and the bridge tree, which is adjustable at both its ends, for supporting and adjusting the spindle and the lower stone or runner upon it, to the upper stone, as described.

STEAM HAMMERS—Thos Sumner, of Paterson, N. J.: Merely varying the direction of the blow, and employing for that purpose a hinged or rocking guide frame for the hammer to descend in, with lever to direct the descent, I do not claim, but I claim the arrangement described of the hinged guide frame, which carries the hammer in relation to the anvil by supporting the said guide frame on a trunnion below situated at the back of or on one side of the anvil and at the same level, or thereabouts, as that occupied by the bar, or works under operation on the anvil; the said hinged guide frame being furnished with a counter-balance weight, to facilitate and steady its swing and relieve the swinging parts from strain when occupying an oblique position as specified, by which arrangement the hammer may be swivelled from the vertical towards the horizontal position, on either side into radial positions with that portion of the bar or work resting on the center of the anvil for the purpose of enabling the hammer to be worked across or round the bar, and to operate alike on its top and corners or sides to give it a round, taper, or polygonal form in its transverse section, or otherwise work and shape it with convenience and dispatch, and whereby the frequent handling or turning of the heavy bar or work is avoided.

HEAD GATE FOR WATER WHEELS.—Hartwell L. Turner, of Strykersville, N. Y.: I claim the manner as described, of constructing, arranging, and operating the head gates of re-action water wheels, for the purpose specified.

VENTILATING SEWER—Enoch Thorn, of Philadelphia, Pa.: I claim the application of a self-acting valve to a common sewer for the purpose of allowing the sewer to relieve itself of the compressed air, which at times accumulates in it, so as to prevent the bursting of the sewer, or of its overflow into the streets, in the manner set forth.

COFFINS—Philo Washburn, Harrison G. O. White, & George A. Copeland, of Taunton, Mass.: We claim, first, a movable and adaptable head frame, round or otherwise, consisting of the following parts, viz.: the head frame, the bar, the uprights, the head cushion, the straps, and the hooks, as represented.

Second, the method by which the cover is secured to the coffin, viz.; the eyes, E E, the hooks, the eyes, D D, and the thumb screws or pins, as represented.

Third, the facings of the edges of the lid and its corresponding aperture with metal, all for the purposes described.

WIRE BONNET FRAMES—Henry Weed, of Philadelphia, Pa.: I claim the method described of forming wire frames for bonnets, viz.: by winding the wire round pins or stays, or their equivalents, arranged as described. on a plate or board, thereby securing uniformity and exactness in every particular, as specified.

WHISTLING TOPS—W.E. Woodbridge (assignor to Chas. Humphrey), of Perth Amboy, N. J.: I claim the attachment, as set forth, of a whistle or other instrument capable of producing a musical sound, without regard to the particular form of the top or the mode in which it is set in motion.

FEEDING PAPER TO PRINTING PRESSES—Wm. F. Collier, (assignor to himself and Joseph Boyden), of Worcester, Mass.: I claim combining with the table (on which the paper is laid) and the sheet lifter. the bar or stand, against which the sheet of paper is driven while being lifted from the pack. The object of such bar being to shake the sheet or produce such a concussion thereon, that should two sheets adhere together and be lifted they may be shaken apart, so that while the upper one is further raised upwards, the lower one may be set free to drop back upon the pack.

I also claim the combining with the lifter the sheet elevator, by which the sheet of paper is elevated or kept elevated and deposited on the top of said lifter, as specified.

I also claim the combining with the rotary lifter, the projecting wing. lip, or plate, by which the sheet of paper is raised and presented to or upon the inclined planes or rests of the transferrers, as specified.

I also claim the transferrer in combination with the exhausting lifter and the inclined rails, the same being employed to receive and transfer a sheet of paper from its place of deposit on the rails to the press rollers, as specified.

I also claim the mode of opening. holding open and closing the jaws of the transferrer. viz., by means of the trigger catch lever, the two stops, and the springs applied to the upper jaw.

I also claim the movable sheet receder in combination with the inclined rests and mechanism, as described, for elevating a sheet from the pack and transferring it to the press rollers, as specified.

I also claim the combining with the sliding or movable table on which the pile or pack of paper is deposited, mechanism for permitting it not only to fall or move towards the sheet lifter, while the upper sheet of the pile is raised above the lifters, but to hold the table firmly in position while the sheet lifter is being moved away from it or the pile of paper on it, as stated.

ENGRAVING OR PRINTING UPON GLASS—M. D. & L. W. Whipple, (assignors to L. W. Whipple & R. B. Fitts), of Somerville, Mass.: We claim the described method of engraving or lettering upon glass, an engraved metallic surface being caused to revolve or vibrate in contact with the surface of the glass, emery, or other suitable cutting material being interposed between the bearing surfaces of the two.

Second, We claim the method described of causing the engraving cylinder to roll in contact with the surface of the article to be engraved the parts which carry and give motion to the cylinder being connected with the vibrating lever operating as set forth.

POWDER CHANNEL TO DOORS OF SAFES AND BANK VAULTS—F. C. Goffin, of New York City (assignor to A. B. Ely. of Boston, Mass.: I claim the construction of channels or hollow chambers. in connection with the doors of safes, vaults, &c., the same being open at top and bottom, and reaching from the lock to the bottom of the door, as set forth.

MOLDINGS FOR METAL CASTINGS—David Brown, of Baltimore, Md. (assignor to J. F. Clark, of Washington, D. C., and David Brown, aforesaid): I claim the arrangement of the pattern and piston plate surrounding the pattern, within a chamber or piston box, in relation to the half flask, operated as described, by which I am enabled to protrude the sand into the half flask from said piston box or chamber ann around the pattern, and thus effect a compression of the sand at the parting instead of at the central portion of the mold, as has heretofore been done, for producing more perfect castings.

PUMP—Ira Carter, of Champlain, N. Y.: I claim, first, the mode of attaching the lug described, made to the cylinder. and the grooves to contain the packing,

Second, the form and operation of the induction valves being housed in by the lug of the cylinder enclosing an air chamber between them, and closing the port holes on a circle section against the water after it passes them thereby obviating lost suction.

Third, the form and principle of the core, which may be made a stationary part in a pump, or an operative part, by changing the locality of the induction valves only.

And fourth, the mode of oscillating by two cranks with friction wheels on their wrists, being brought to act upon one lever between them, vertically attached to that part of the pump to be operated, said cranks being made firm on two parallel horizontal shafts geared to revolve with equal speed, and gathering at the top.

MILK AND OTHER EVAPORATORS—A. F. Dalson, of New York City: I claim the combination of the shallow pan with a rapid current of air underneath the cover, and thence through the central draught pipe, as shown, together with the apparatus for continual stirring, by means of the revolving cover and fixtures, as described.

PREPARATION OF ARCHIL—Jonas Eberhardt, of Philadelphia, Pa: I claim the production of a bright and clear steam purple, without the use of any acid, after its being printed and steamed, as described.

SMUT MACHINES—H. B. James, of Trenton, N. Y.: I claim the combination of the hopper, trunk, spiral passage, and separator, effected by means of a common air-tight casing, as set forth.

HEEL CUTTERS—A. D. Kelley, of Rochester, N. Y. Ante-dated March 20, 1854: I am aware that spring knives have been used in sole cutters, and that they have had screws adapted to them in such a way as to change their form or forms according to the size of the sole to be cut by them; I therefore do not claim such,

But I claim the combination and arrangement of the flexible yoke and its screws, with the spring blade for the former or pattern, as specified, such flexible yoke and screw enabling a person to change the form of the cutting edge of the knife, or to adapt the knife to any pattern block as set forth.

MAGAZINE REPEATING AND NEEDLE GUN.—Edward Lindner, of the City of New York: First, I do not claim the barrel containing the charges, but claim the application of the rack situated between the gun barrel and the cartridge barrel, and the construction of the piston in connection with the said rack for the purpose of pressing the cartridges into the revolving breech piece as described.

Second I do not claim the needle for the purpose of igniting the priming, but I claim the spiral spring round the needle, together with the toggle joint at the upper end of the hammer constructed as set forth, and acting upon the needle in such a manner that after said toggle joint has pressed the needle sufficiently far into the cartridge to ignite the priming, said toggle joint is forced upwards, allowing thereby the needle to spring suddenly back and pass under the toggle joint by the action of the above-mentioned spring. and by which quick returning motion any heating of the needle is prevented.

Third, I do not claim the revolving breech piece with spiral grooves on the outside circumference: but I claim the arrangement and manner of working the pin, by which the revolving breech piece is made to turn. as described.

Fourth, I claim covering the bottom of the cartridges with a thin skin to facilitate the piercing process of the same.

Fifth, I claim the ramming hammer worked as set forth.

BREECH-LOADING FIRE-ARMS—A. N. Newton, of Richmond, Ind.; I claim, first, the method described of operating the sliding breech-pin by means of the lever the thumb lever, and the spring, all applied or attached to the arbor, which forms the tumbler shaft, operating as set forth.

Second, Locking and unlocking the sliding breech-pin by means of a locking piece which slides in grooves in the stock or shank of the gun and a lever, having a stud working freely in a slot of suitable form, in a plate attached to the same arbor as the levers by which the breech pin is operated, the whole being as set forth.

Third, fitting the cock and tumbler, or other equivalents usually secured to the tumbler shaft. loosely to the said shaft, within the stock or shank of the piece, and causing the cock to be driven back to cock the piece by means of a pin attached to the lever, by which the sliding breech is moved back and forth, whereby the sliding breech is allowed to return after the cartridge is introduced, and leave the piece cocked as described.

COMBING COTTON AND OTHER FIBROUS MATERIALS—Jas. Noble, of Leeds, England: I do not confine myself to the precise details shown and described, so long as the peculiar character of my invention be retained.

I claim for the purpose of operating upon fibrous material, as set forth, and in combination with brushes and draw rollers, or their equivalents, the combining of two rotating rings of teeth, so that not only shall one rotate in and be eccentric to the other, but, so that at or near one point of the revolutions of the two rings, they shall come nearly or quite together or in contact with each other, as specified; such rings. by their cooperation. being made to separate the long from the short fibers of the material when subjected to the action as explained.

VENTILATED FLOUR BARREL—Thos. Pearsall, of Smithboro', N. Y.: I claim the manner described of preventing fermentation of flour, meal, or other vegetable commodity, by dividing the bulk, as specified, that is to say, by means of air pipes or passages, arranged to run through the cask, as set forth, and whereby the flour is prevented from heating and becoming sour at the center of the cask, by the free circulation of the cold atmosphere or air through said tubes.

PLOWS.- Jacob Revercomb, of Botelоust, Va.: What I claim in ploughs with self sharpening points, is the mode of fastening points, the same consisting in the insertion of the keys, through an opening in the land side, as set forth, in combination with a slot so placed in the stem of such points that in the different or reversed position of the points, the slot shall be in place for the reception of the key.

CORDAGE MACHINERY.—Philos B. Tyler, of Springfield, Mass.: I claim in the regulator, as described, wherin the tension of the strand so acts upon a friction brake as to make a uniform resistance, and consequently a uniform tension of the strand or thread.

KEROSENE BURNING FLUIDS.—Abraham Gesner, of Williamsburgh, N Y. (Assignor to The Asphalte Mining and Kerosene Gas Company of New York City) I claim as new manufactures or compositions of matter for illuminating and other purposes, the liquid hydrocarbons described, which I denominate "A Kerosene," "B Kerosene," and "C Kerosene." Three Paterts.

RE-ISSUES.

DRYING GRAIN.—Henry G. Bulkley, of Kalamazoo, Mich. Patent originally dated, March 2, 1852: I claim the method of seasoning or kiln drying substances by using steam in a vessel which has an opening communicating with the atmosphere to limit the pressure for the purpose of transmitting caloric to the substances to be seasoned, or kiln dried, in the vessel or vessels containing them, as specified.

SEWING MACHINES—I. M. Singer, & Ewart Clark, of New York. (Assignees of Chas. Morey & Jas. B. Johnson, of Boston Mass.) Patent originally dated, Feby. 6, 1849: In the above machine, we claim the combination of a needle and a hook, as constructed and made to operate together, for sewing cloth, (or any other material or materials capable of being sewed) as specified.

We are aware that an adjustable bar has been made use of to hold the cloth to the cloth bar, and prevent it from being retracted by the withdrawal of the needle, and we therefore lay claim to no such device. but we do claim the spring or curved arm for the purpose of holding the cloth to the surface of the feeding apparatus by a yielding pressure, in the manner set forth.

NOTE.—Nine of the applications in the above list were prepared at the Scientific American Patent Agency.

Iodide of Potassium.

The following is from the "Archives der Pharm." by Prof. A. Overbeck, on the preparation of the above named useful substance:—

"Iodide of formyle is prepared from 3 equivs. alcohol, 6 equivs. iodine, and 5 equivs. potash. If 4 equivs. of iodine be employed to $C^4 H^6 O^2$, the mass thickens too much by separation of the iodide of formyle produced, so that the greater addition of alcohol is very essential to the facilitation of the operation. This is performed in the following manner:—

The necessary quantity of watery alcohol ($C^4H^5O.,H.O.$) is first gently heated in a beaker or flask; the dry iodine and the potash (the latter dissolved in as little water as possible) are then alternately added, in such a manner that before each addition of iodine the solution is completely decolorized. The iodide of formyle produced separates for the most part during the operation in citron-yellow laminæ; its complete separation is effected by pouring over it 20 times as much water as there was alcohol employed; the whole is then collected on a filter, pressed between blotting-paper, and boiled with solution of potash (1 equiv. of iodide of formyle to 4 equivs. potash) until it is completely decomposed into formiate of potash and iodide of potassium.

This fluid, mixed with that filtered from the iodide of formyle, is now evaporated to dryness, then mixed with some powdered charcoal (for more ready decomposition of any iodate of potash that may have been formed), and heated to redness; the mass, which contains iodide of potassium and carbonate of potash, is then extracted either directly with alcohol, or with water after neutralization by hydriodic acid. Pure iodide of potassium is obtained by crystalization from either of these extracts."

The London Crystal Palace.

The London Crystal Palace, which was removed from Hyde Park to Sydenham, near London, was re-opened on the 10th ult. by the Queen in person.

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TO CORRESPONDENTS.

P. E. P., of Montreal.—Some two years since, E. A. Pond, of Rutland, Vt., obtained a patent for a pill making machine, which we should think capable of operating well. You had better apply to him for information.

D. H., of Mass.—There are so many objections to your proposed improvement in railroading, that it is almost useless to point out any. We will suggest one which, as railroads are now constructed, would prevent the use of your plan. Using a horizontal wheel in combination with a vertical one, would render it necessary to dispensewith switches and turn-outs,and one road could not cross another, as at present is the case. Your scheme requires more careful thought than you have bestowed upon it. It is absurd.

C. A. E., of Pa.—One of the earliest processes for annealing iron and steel without oxydizing it,was to inclose it in close cast iron vessels, and surrounding it with ground flint, such as is used in the manufactory of pottery, and then exposing the vessels to a red heat in proper furnaces. This process was used with success in England 25 years ago.

R. E., of Ct.—To publish such long communications as you have sent us, would be to establish an extensive manufactory of waste paper—something which we do not mean to be engaged in at present. You can just as well condense your ideas one half, as to spin them out to such an inordinate length. You have good ideas, now study the best means to manage them. Your improvement in looms is new, we think. Send us a better sketch of it.

M. M., of N. Y.—You will find any amount of information upon the manufacture of ink in the back volumes of the Sci. Am.

H. H , of Ind.—The science of bleaching is one which we cannot explain in a letter. You must learn the art by practice, as others have done, before you can be successful in it.

E. R., of Mo —The improvement you describe in planing machines is almost exactly like the Woodworth Patent. You will find such machines more generally in use than any other.

B. R. A., of Mass.—Warming rooms by heated air has long been known, and is not a modern invention. Economical plans were put into use in England many years ago, and the improvements which have since been made have not materially simplified the matter. Some better plan is needed for heating buildings, as hot air furnaces are not very healthy, besides, they injure the woodwork and furniture of a house, and are elephantine in the amount of food necessary to supply them.—Lyman's apparatus, illustrated several weeks since, is an improvement.

M. C., of Geo—Bronze can be made of 7 parts of pure copper, 3 parts of zinc and two parts of tin. The copper must be fused before the other ingredients are added. Pliny describes the metal used by the Romans for their statues: melted copper, into which they put 1-3 of its weight of old copper which had been long in use; to every 100 lbs. weight of this mixture they added 12 1-2 lbs. of an alloy compound of equal parts of lead and tin.

J. B, C., of Tenn.—You will perceive by a short article of ours in a recent number, that we anticipated the ideas in your last letter respecting the undershot wheel.

R. G. P., of N. J.—India rubber can be pressed while soft into a mold, not otherwise. It is melted by high heat, or dissolved with turpentine or naphtha in a close heated vessel.

M. McD., of Va.—Your telegraph is the same as the chemical telegraph for which Prof. Morse has a patent, only he uses a roller in place of your ball. Neither of the two is as good as Bain's.

A. M., of Mich.—We do not regard your proposed plan for testing boilers as embracing any patentable features—and it does not strike us as possessing any advantages not already known to those skilled in such matters.

J. M., of N. Y.—It is not an uncommon thing for inventors, who employ other agents to make their applications, to write us for information about their cases—when they will come up for examination in the Patent office, etc. We can only say to such, that we have as much business of our own as we can attend to, without replying to inquiries which cannot and do not concern us.—Your agents are respectable and reliable, and will advise you honestly no doubt.

E. A. M., of Mich.—We are obliged for your suggestions. That question of the moon's influence is a curious one, and we have of late read many interesting statements in regard to it. It is indeed a profound question, and deserves more study. Mell, an experienced writer, published in "The Annals of Philosophy," some few years ago, the interesting observations which he made on this subject; and if you can find the work, it will repay your careful perusal. No doubt the vegetable world is much affected by the moon's influence.

W. L. S., of S. C.—The using of a water wheel to pump the water which has just passed the wheel, back into the resevoir to be again used, approaches very near perpetual motion. We would not advise you to spend much money in experimenting, others have tried the same experiment to the same effect you will accomplish.

J. W., of N. H.—Mr. S. C. Hill, No. 12 Platt Street, will furnish you a good force pump. Your odd numbers would be of no use to us. We have not those numbers to supply you.

H. L., of N. Y,—The inflating of bags with hydrogen gas for the purpose of raising vessels, is no more patentable than its use to inflate balloons.

D. F., of Pa.—The Babbit Metal Patent was extended for 7 years, by Commissioner Mason, and the patent will not now expire until July 1860. If you were opposed to the extension you should have signified it before it was granted. The day of hearing was advertised in our columns, and you should have filed in your remonstrance at that time. The assignee under an original grant has no claims to rights, under an extension.

L. J. W., of N. J.—Your suggestions came too late.—The specification and drawings have been deposited in Patent Office. We consider your remarks of no consequence, and should not have embraced all of them in the specification if it had not gone into the office.

G. G. C., of Va.—We can allow you a commission only on the amount of money collected. Thanks for your additional subscribers.

E, H., of Md —In No. 1, vol. 7, Sci. Am. you will find an elaborate description of Phillips' Fire Annihilator.

S. & K., of Mass.—Arranging the hammer to strike on the outside of the bell, is as common with us as placing the hammer on the inside. The fire bells in this city are all struck in this manner.

G, W. D., of N. Y.—Arranging a tube in the manner you propose, would, we think, be patentable for the purpose specified.

J. R. C., of Va.—Your machine for drilling rocks appears very simple, and we should think it would work very well, but would not like to state that we believe it to be the best plan for a rock driller out. We think you might obtain a patent, however, and in seeing a model we might have a better opinion of the utility of your machine than we are able to form from your very bad drawings.

C. H. B., of Mass.—We think your locomotive boiler is novel, and will economise fuel, but we have our doubts as to its being patentable. Your arrangement of the water space is entirely new to us, but we discover nothing else that approaches patentability.

G. G. G., of N. Y.,—The combination of coal ashes with common paints would not in our opinion be patentable.

R. T T., of Ind.—Your railroad indication is new in a mechanical sense, but not in a patentable one. The same ends have been attained by equivalent means, but not precisely by the same.

X. Y. Z., of N. Y.—We consider your invention of the greatest importance if it will accomplish the result you specify in a perfect manner. We should certainly think the invention patentable, and there is no question as to its being a profitable one if properly managed.

Money received on account of Patent Office business for the week ending Saturday, July 1:—

J. W. B., of Ark., $40: L. A. H., of Ky., $10: W. & W., of N. Y., $610: H. H., of N. Y., $30: W. M. C., of N. Y., $30: F. & A., of O., $30: J. C. F., of N. Y., $60: C. T. P., of N. Y., $80: J. W. S., of Ot., $55: L. B. D., of R. I., $30: W. & P., of N. Y., $500: R. L. S., of Pa., $25: E. G. of Vt., $25: W. R., of Mass., $60.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 1:—

J. W. B., of Ark.: L. J. W., of N. Y.: M. S., of Ct.: H. W. A , of N. Y.: C. W. B., of Mass.: R. L. S., of Pa.: E. G., of Vt.: W. R., of Mass.

A Chapter of Suggestions, &c

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, forty numbers. price, in sheets, $1; bound' $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, none complete, but about 30 numbers in sheets which will be sold at 50 cents per set; of Vol. 9, all but five numbers.

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American and Foreign Patent Agency.

IMPORTAN TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

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EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments,and to save much time and expense to applicants.

FAIRMAN & WILLARD'S BORING MACHINE, for boring car wheels. This is the best machine in use, and warranted to bore thirty wheels in ten hours, and bore them perfectly true. It is equally well fitted for boring Pulleys, Gearing, &c. Price $600, cash.
JAMES W. HOOKER,
43 4eow Buffalo Machinery Depot, 36 Lloyd St., Buffalo.

FOR RAILROADS AND MACHINE SHOPS. I am prepared to furnish at the lowest rates, the following Oils: Pure Refined Sperm, Solar, Sperm, and Engine Oil, for locomotives, &c. Refined Elephant Oil, for burning. Lard oil, No. 1, 2, and extra. Lubricating, Whale, and Resin Oil, for heavy machinery.
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25 HORSE POWER ENGINE AND BOILER complete. Ready for shipment—has upright tubular boiler—cylinder horizontal on heavy bed frame—flue heated governor, &c., for sale by,
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43 3 Buffalo Machinery Depot, 36 Lloyd St., Buffalo.

BUFFALO MACHINERY DEPOT. JAMES W HOOKER, 36 Lloyd St., Buffalo, offers for sale all kinds of machinery, as follows: Engine Lathes, Planing Machines, Universal Chucks, Caststeel Borers, Drills, Leather and Rubber Belting, Packing and Hose Oils, Millstones, Portable and Stationary Engines, Boilers, and Machinery generally. 43 tf

PATENT ROCK DRILL.—The simplest, cheapest and best ever offered to the public. For information apply to A. B. ELY, Esq., Boston, Mass., agent of North American Rock Drilling Company. 43 3m

FOR SALE, LOW.—The Patent of a Self-Unloading and Adjusting Hay Elevator. Patented May 30th 1854. Address, Horsham, Pa.
43 7* T. T. JARRETT, Patentee.

READING'S PATENT CORN SHELLER and Cleaner—capacity 200 bushels per hour. 9 first premiums awarded in the Fall of 1853. Patent Rights and Machines now for sale at the corner of 2nd Street and Pennsylvania Avenue, Washington, D. C. I challenge the world to produce its equal. Address personally or by mail. WILLIAM READING. 43 13*

THE EUROPEAN MINING JOURNAL, Railway and Commercial Gazette. A Weekly Newspaper, forming a Complete History of the Commercial and Scientific Progress of Mines and Railways, and a carefully collated Synopsis, with numerous Illustrations of all New Inventions and Improvements in Mechanics and Civil Engineering. Office, 26 Fleet Street. London. Price $6 1-2 per annum. 43

UNITED STATES PATENT OFFICE.
Washington, June 19, 1854.

ON THE PETITION of George Draper, of Milford, Massachusetts, praying for the extension of a patent granted to him on the 28th of October, 1840, for an improvement in "rotary temples for looms." for seven years from the expiration of said patent, which takes place on the 28th day of October, 1854—

It is ordered that the said petition be heard at the Patent Office on Monday, the 16th of Oct. next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing. All testimony filed by either party, to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 6th of Oct.; depositions and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the argument, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Pa.; Scientific American, New York; and Post, Boston, Massachusetts, once a week for three successive weeks previous to the 16th day of Oct. next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 42 3

PATTERNS—For Castings and Models for the Patent Office made to order at the pattern shop of the Peck Slip Foundry, Williamsburgh, L. I., near the ferry.
41 3* WM. ARCHER.

T. M. CHAPMAN'S PATENT SAW FILING Machine. The best known and without a rival. The subscriber offers for sale Territorial Rights, and also builds and sends machines wherever they may be wanted. T. M. CHAPMAN, Patentee, Old Town, Me. 40 10*

FOR $1000 EACH—An assignment will be made, (or security given therefor) of one third the rights patent for England and France, of a breech-loading and self-priming rifle, preventing escape at the breech, simple and durable arrangement and construction, and capable of one shot in five seconds, or one hundred in twelve minutes. U. S. Patent applied for. Address J. C. DAY, Hackettstown, N. J. 39 5*

PALMER'S PATENT LEG—"The best appliance ever invented." Pamphlets containing the testimonials of the first American and European surgeons, and other information concerning this invention sent gratis to all who apply to PALMER & CO., Springfield, Mass.: or 376 Chesnut st, Philadelphia. 42 13*

LEONARD & WILSON—No. 60 Beaver st. and 109 Pearl st, have constantly on hand and for sale a full assortment of Machinists' and Carpenters's Tools, embracing every variety of Engine and Hand Lathes, Iron Planing Machines, Mortising and Tenoning Machines, Wood Planers, &c. Also, Leather Belting of all sizes made of the best oak tanned butts, stretched on powerful machines, riveted and cemented. 42 13*

IMPORTANT—To Machinists and Mathematical Instrument Makers. An application for a patent is on file for an attachment to Gear Cutting and other Dividing Engines, by means of which the circle may be accurately divided into any desirable number of equal parts. Persons wishing to use such an attachment, or to become otherwise interested in the right, will receive further information by addressing, post-paid, P. O., box 116, Worcester, Mass. WM. H. BROWN. 42 4*

MATHEMATICAL,—Optical, and Philosophical Instruments. Our priced and illustrated Catalogue furnished on application, and sent by mail free of charge. McALLISTER & BROTHER,
42 4 Opticians, 48 Chesnut st, Philadelphia.

PATENT RIGHT FOR SALE.—We are ready to dispose of the Patent Right, (or any part of it) of the best Stone Drilling Machine now in use, or we are prepared to furnish working machines at very reasonable prices, these machines will drill from 1 to 7 inches in diameter, and 100 feet deep, and can be worked by Hand, Horse, or Steam Power, one machine performing the work of twenty-five men. For further particulars and circulars with cuts address JAS. T. WHITTEMORE, Agent American Manufacturing Co., 39 State street, Boston. 40 tf

NOVELTY IRON WORKS—Manufacturing of Machinists' Tools: also Engine Lathes, with an improved Tool Rest, Lathes, and Iron Planers kept on hand: for sale by W. W. NICHOLS & CO., cor. B and Turnpike street, Boston, Mass. 41tf

STAVE AND BARREL MACHINERY—HUTCHINSON'S PATENT.—This machinery, which received the highest award at the Crystal Palace, may be seen there in operation during the ensuing season. Cutting, Jointing and Crozing Staves and Turning Heads. Staves prepared by this process are worth to the cooper from 20 to 40 per cent more than when finished in another way. Applicable alike to thick and thin staves. Apply to C. B. HUTCHINSON & CO., Auburn, N. Y., or at the Crystal Palace. 34tf

KENTUCKY LOCOMOTIVE WORKS—Corner of Kentucky and Tenth streets, Louisville, Ky.—The proprietors of the Kentucky Locomotive Works would respectfully inform Railroad Companies and the public generally, that, having completed their establishment, they are now prepared to receive and execute orders with fidelity and dispatch. They will contract for Locomotives, Passenger, Baggage, Freight, Gravel, and Hand Cars, of every style and pattern, as well as all kinds of Stock and Machinery required for railroads. Particular attention will be paid to Repairing, for which they have every facility. They are also prepared to contract on favorable terms for building all kinds of Machine Tools, such as Turning Engines, Lathes, Planers, Drills, Slotting, Splining, and Shaping Machines of every variety of pattern. Having also a large Foundry connected with the establishment, orders for castings are solicited, and will be filled with promptness. Car Wheels of any pattern can be furnished on short notice. Double and single plate and Spoke Wheels of all sizes constantly on hand. Communications or orders must be addressed to OLMSTED, TENNEYS & PECK, Louisville, Ky. 40 6m.*

PIG IRON—Scotch and American; also English Boiler Plate and Sheet Iron, for sale at the lowest market prices, by G. O. ROBERTSON, 135 Water st. cor. Pine, N. Y. 40tf

JOHN PARSHLEY, No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pulleys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 35tf

$100 REWARD—To the Manufacturers of Bank Note Paper. The Executive Committee of the Association of Banks for the Suppression of Counterfeiting, hereby offer a reward of One Hundred Dollars for the best specimen, in the opinion of the Committee, of Bank Note Paper, of not less than five hundred sheets, which may be submitted to them on or before the 1st day of January next. All paper submitted, except that selected by the Committee, to be returned to the persons submitting the same.
J. M. GORDON, Secretary.
Boston, Mass., March 31 1854. 31 15*

FULTON FOUNDRY AND MACHINE WORKS S. W. corner of Green and Morgan streets, Jersey City, N. J. The subscribers are prepared to contract for Sugar Mills and Mining Machinery of every description. Horizontal Steam Engines of various sizes constantly on hand. All orders executed with promptness.
34 13* FIELDS, BROTHER & CO.

FOR SALE—By the Baltimore and Ohio Railroad Co., 24 Crate Cars, adapted to railroad purposes, which will be sold at a reasonable price. For further information apply to SAMUEL J. HAYES, M. of M., Baltimore and Ohio R. R, Co., or BRIDGES & BRO., 64 Cortland st., New York. 34 tf.

NORCROSS' ROTARY PLANING MACHINE. The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.
Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
The printed Report of the case with the opinion of the Court can be had of Mr. Norcross. 36 6m*

MACHINERY FOR SALE—The following machines are for sale at the "Scientific American" Office:—Alcott's Concentric Lathe, price $25.
Portable Mortising Machine, $20
Bushnell's Iron Drill, $25
All orders should be addressed (accompanied with the cash) to MUNN & CO., 128 Fulton st., N. Y.

MACHINISTS TOOLS—Power Planers 4 to 16 feet long, weight 1,000 to 10,000 lbs. Engine Lathes, 6 to 19 feet long, weight 1,700 to 8,400 lbs., swing 21 to 38 inches. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Slide Rests, Chucks, &c., of best materials and workmanship constantly on hand, and being built, also the best Grain Mills in the country, "Harrison's Patent." For cuts giving full description and prices address NEW HAVEN MANUFACTURING CO., New Haven, Conn. 38 tf.

WOODWORTH'S PATENT Planing, Tonguing, Grooving Machines.—Double machines plane both sides, tongue, and groove at one and the same time, saving one half of the time when lumber is required to be planed on both sides. Large assortment constantly on hand. Warranted to give entire satisfaction to purchasers. JOHN H. LESTER,
37 13* 57 Pearl st, Brooklyn, L. I.

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
35 tf Consulting Engineer, 64 Broadway.

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of feet Spruce flooring in ten months. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

STATIONARY STEAM ENGINES—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 30 horse, $1,037: they have Judson's patent valves, and will be warranted to work well. S. C. HILLS,
31tf 12 Platt st, New York.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American.
16 1y*

SEWING MACHINE—The Office and Warerooms of the Wheeler & Wilson Manufacturing Company, for the sale of their Sewing Machines, is removed to No. 343 Broadway, where the public are invited to call and examine them in practical operation. 31 13*

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Scientific Museum.

Scientific Memoranda.

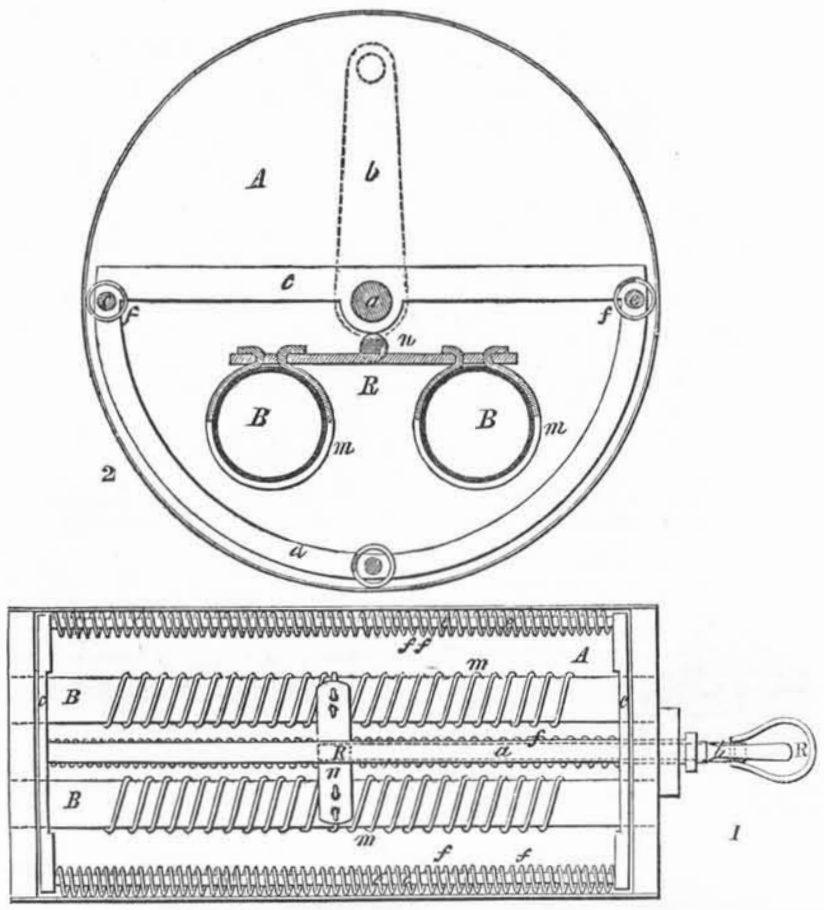
DETECTION OF POPPY OR NUT OIL IN OLIVE OIL.—Marchand gives the following process for detecting this common adulteration. When four drops of olive, poppy, or nut oil are placed separately upon a slab of porcelain, and pure concentrated sulphuric acid added, and mixed with the oils, by inclining the slab from side to side, the following results appear:—Olive oil acquires at the points of contact with the acid, a yellow color, passing into orange; the liquid portion surrounding the magna rapidly becomes a dirty gray, and then a brownish black, while the yellow color first produced by contact with the acid gradually passes into chesnut brown. There is never an appearance of blue or lilac shades. Poppy oil immediately takes, where it touches the acid, a fine lemon yellow, which darkens rapidly in some parts. The liquid part touching the colored part never acquires the dingy gray peculiar to olive oil. In 10 or 15 minutes we may observe, at several points of the liquid region bordering immediately upon the colored part, a rose shade, which quickly passes into bright lilac, increasing in intensity. In half an hour the lilac passes into a violet blue, and the original yellow gradually becomes a dead brown. Nut oil behaves nearly like olive oil, but the yellow matter is more plentiful, forms and turns more quickly, so that it acquires a chestnut brown in less than 10 minutes. Sulphuric acid may be more readily mixed with this oil than with the two former. The gray border characteristic of olive oil is produced here also, but instead of slowly becoming black, it passes rapidly into olive green. It never gives a lilac tint. Mixtures of olive and poppy oils may be tested by the same reactions. In time the colors characteristic of poppy oil—pink, lilac, violet, blue—present themselves in succession with an intensity proportioned to the quantity of poppy oil present. One-tenth part of poppy oil may, according to Marchand, be thus detected.

BI-SULPHATE OF SODA—A SUBSTITUTE FOR CREAM OF TARTAR.—At the present time the cream of tartar is about four times higher in price than it was two years ago, owing, it is said, to the failure of the grape crops in many parts of the world, during the past three years As the tartar is much used in dyeing woolen goods, a good and cheap substitute for it, is of no small importance. This, a German periodical "Deutsche Muster Zeitung," says, has been obtained in the bi-sulphate of soda, and that its use in the dyeing of woolen goods is becoming more general every day, and that it effects a saving of 100 per cent. The colors in the preparations of which it has hitherto been employed are chrome-black, chrome-brown, gray, all fancy colors, green, carmine, blue.—A decoction made in 4 lbs. of the bi-sulphate has the same effect as 4 lbs. of alum and 2 lbs. of tartar; in the dyeing of some colors some alum is, however, still employed. For every 50lbs. of wool to be dyed of a chrome-black, 1lb. of chromate of potash, and ½lb. of the substitute are required. The wool is to be introduced at a temperature of 190° Fahr., then boiled for fifty minutes, and dyed in a fresh bath of logwood, containing, according to the shade, ¼ to ½ lb. of the dye wood to the pound of wool. To dye the same quantity of wool of a chrome-brown, 1lb. of chromate of potash, 1½lb. of substitute, and ½lb. of alum are employed. The wool is boiled for one hour, and then dyed in a bath of Brazil wood; or for yellowish brown and bronze shade, in a bath of fustic, Brazil wood and logwood in certain proportions.

On the Employment of Water in Filling up Deep Bore Holes in Blasting Operations.

In working the great deposit of magnetic iron ore, which occurs under peculiar circumstances in the granite at Moravitza in the Banat, it has been found necessary, in consequence ef the hardness of the rock and ore, to use bore holes from 2 to 2½ inches in diameter, and 36 to 40 inches deep. The packing of such holes with clay being a very tedious operation, Mr. A. Keszt endeavored to substitute water for the clay, with considerable success. One of Bickford's safety fuses, which burns in water perfectly, is attached to the cartridge and fastened with thread; this cartridge is let down to the bottom of the hole, and about 1½ to 2 inches of clay firmly packed over it, the remainder of the bore, nearly to the top, being filled with water. In the case of very oblique bores, where the pressure of the water upon the botton was small, he plugged up the orifice of the bore with a plug of wood, driven with considerable force into it, through a slit in which the fuse passed. More recently still he had used instead of a small quantity of clay first introduced, to keep the cartridge from becoming wet, a mixture of tar and pitch, which most effectually preserves the powder from damp. Great numbers of trials have convinced him that the blasts fired with this arrangement lose nothing in force, whilst there is a great saving of time and consequently of expense.—[Osterr. Zeitschrift fur Ber-u-Huttenwesen.

PREVENTING INCRUSTATIONS IN STEAM BOILERS.



The annexed engravings are views of an improvement for preventing incrustations in steam boilers, and increasing the production of steam, for which a patent was granted to John McMullen, of the city of Baltimore, Md., on the 20th of last May (1854.)

Figure 1 is a longitudinal section of a cylindrical steam boiler, and fig. 2 is a transverse section of the same, with the scale preventive attached. Similar letters refer to like parts. The nature of the invention consists in the employment of apparatus for agitating the water in the boiler along its contact with the surfaces of the same, for the purpose of preventing the adhesion of the sediment to the plates of the boiler. Another object of the mechanical action in the boiler, is an increase in the quantity of steam generated by the continual removal of the steam bubbles from the surface of the boiler.

A is the boiler; B B are two tubes passing longitudinally, and *a* is a shaft running longitudinally through the boiler. One end of the shaft may be keyed on the inside of the boiler; the other passes through a stuffing box outside for the attachment of suitable gearing—a crank, *b*, is shown attached. If the boiler is of very large dimensions, one or more hangers may depend from the boiler to sustain the shaft, *a*, at intermediate points. At each extremity of the shaft is a cross bar, *b*, permanently keyed to it; the circular pieces, *d*, are also attached to this bar; these pieces and the bar, *c*, are arranged to be capable of motion with the shaft, *a*, inside, as close to the ends of the boiler as possible, without touching. In case of a number of hangers being employed in a boiler, cross and circular pieces, *c d*, must be placed upon the shaft, *a*, near each hanger. Running between *c d* are bars, *e*, (the number to be decided upon by circumstances,) each covered with a loose spiral, *f*, or any equivalent arrangement, such as chains, instead of spirals and bars. This is the arrangement of apparatus for a plain cylindrical boiler, which will be kept free from incrustations by the alternate revolutions of the shaft, *a*, causing the spirals, or their equivalents, to rub over near the interior surface of the boiler, thus preventing the settling and adhering of sedimentary matter to the metal. Impurities are by this means kept continually mixed with the water, and are blown out at stated periods during the operation of the apparatus.

The tubes, B B, are surrounded by spirals, *m*, connected by a brace, *n*, to which is attached the rod, R, one extremity of which protrudes through a stuffing box in the end of the boiler. The reciprocating motion of the rod, R, caused by a suitable connection with the engine, moves the spirals, *m*, alternately backwards and forwards over the tubes, thus agitating the water surrounding them, and preventing the deposition and adhesion of incrustations.

The general arrangement of apparatus described would require but slight modifications to adapt it to tubular and *many* flue boilers; the principal change required being in the form of the frames *c d*.

The continual action of the spirals near the surfaces of the tubes and the plates, removes steam bubbles as fast as they arise, therefore the interior surface of the boiler is kept in constant contact with the water instead of being separated from it by innumerable bubbles or spheroids, which, as is well known, obstruct the quick absorption of the heat by the water. This improvement, therefore, facilitates the rapid generation of steam.

It has been stated that explosions have sometimes taken place in boilers, in which thick incrustations had been formed, in consequence of the iron becoming red-hot (the incrustation being a good-non-conductor,) then scaling off, and exposing a large highly heated surface to the water, whereby steam was rapidly generated, and a pressure suddenly raised above that which the weakened hot plates could sustain. This invention will prevent explosions from such a cause.

The apparatus can be applied to all cylindrical flue or tubular boilers, and it is especially applicable to marine boilers with lap-welded tubes. In such boilers, a saline incrustation is formed during every voyage; this requires considerable trouble and labor to remove; it injures the metal and shortens its term of duration; the scale obstructs the action of the heat, and thus causes the consumption of more fuel. This apparatus appears to be of great utility for such boilers, by preventing the three evils specified; it should therefore receive the prompt attention of every steamship company in our country. In flue boilers, with stay bolts irregularly arranged, this apparatus could not well be applied.

It is well known that much trouble is experienced in almost all boilers. especially when the water is impure, and in locomotives which are fed with different kinds of water; this apparatus by agitating the water, will prevent foaming, and consequently priming.

If the water falls below the water line in the boiler, the action of the spirals, will keep what would otherwise be an exposed surface, continually wet, even when the water falls considerably below the line by throwing the water over such surface, and thus it will prevent the frequent explosions from water getting below the water line.

It is a singular fact, that while many chemical compositions and substances have been tried and proposed, to prevent incrustations in steam boilers, that this, to us, should be the first mechanical apparatus applied for such a purpose. The principle of the invention is a correct one, and the objects proposed to be accomplished by the inventor are such as every intelligent engineer, and owner of a steam boiler cannot fail to appreciate.

More information may be obtained by letter addressed to the patentee, No. 73 South street, Baltimore.

New Cure for Burns.

Mr. A. Bronson, of Meadville, Pa., says, from fifteen years' experience, he finds that Indian meal poultice covered over with young hyson tea, softened with hot water, and laid over burns or frozen flesh, as hot as can be borne, will relieve the pain in five minutes. If blisters have not arisen before they will not after it is put on, and that one poultice is generally sufficient to effect a cure.

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